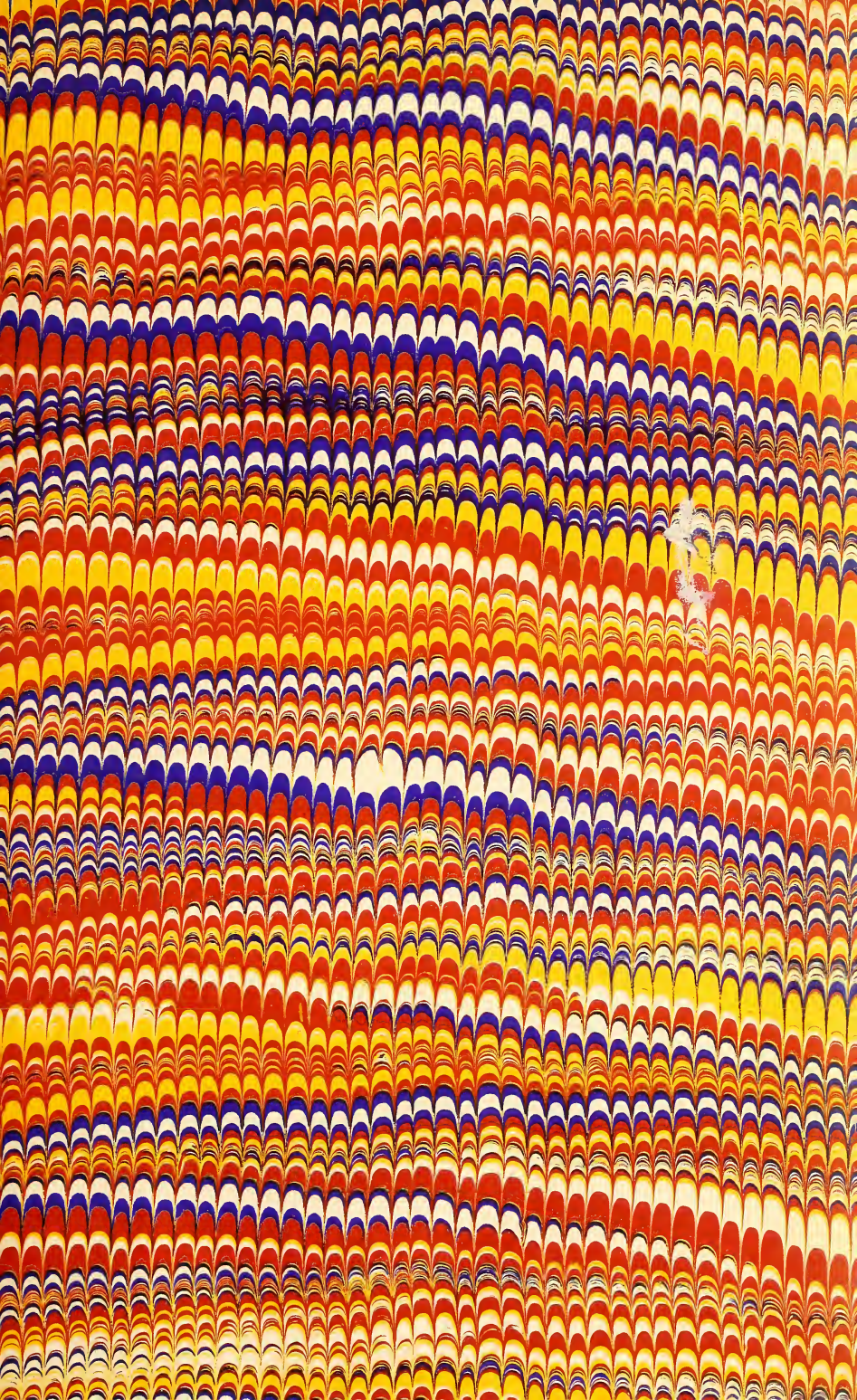


5.42
.5
5
124701
Sm Rust
2.6

THE

NATURALIST:

A

MONTHLY JOURNAL OF

Natural History for the North of England

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,

THE UNIVERSITY, LEEDS.

with the assistance as referees in special departments of

H. B. BOOTH, F.Z.S., M.B.O.U.
J. M. BROWN, B.Sc., F.L.S., F.R.E.S.
W. H. BURRELL, F.L.S.
CHRIS. A. CHEETHAM, F.R.E.S.
W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.
RILEY FORTUNE, F.Z.S., F.R.P.S.
Professor A. GILLIGAN, D.Sc., F.G.S., M.I.M.E
F. A. MASON, F.R.M.S.
Mrs. ELSIE M. MOREHOUSE.
THOS. SHEPPARD, M.Sc., F.G.S., F.Z.S.
T. W. WOODHEAD, PH.D., M.Sc., F.L.S.

SMITHSONIAN INSTITUTION
DEC 17 1936
304669
NATIONAL MUSEUM

1936.

LONDON

A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE, E.C.4

AND AT HULL.

PRINTED BY A. BROWN AND SONS, LTD.,
PERTH STREET WEST, HULL.

AN., 1936

No. 948
No. 721 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND.

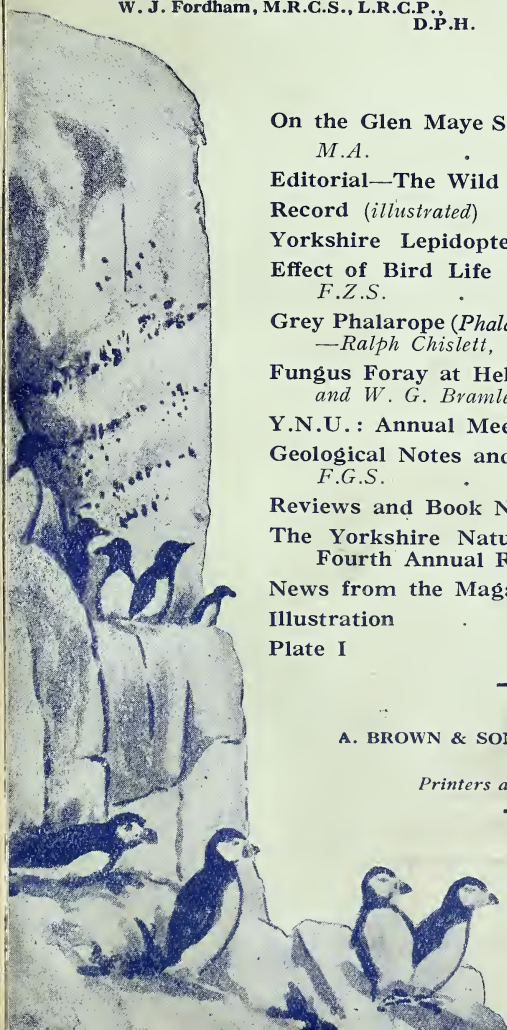
SMITHSONIAN INSTITUTION
JAN 14 1936
NATIONAL MUSEUM

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S. M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
F. A. Mason, F.R.M.S.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

	PAGE
On the Glen Maye Shore—*W. Lawrence Schroeder, M.A.*	1
Editorial—The Wild Plant Conservation Board	2-3
Record (*illustrated*)	3
Yorkshire Lepidoptera in 1935—*Geo. E. Hyde*	4-5
Effect of Bird Life on Pond Life—*Eric Hardy, F.Z.S.*	6-7
Grey Phalarope (*Phalaropus Fulicarius*) in Yorkshire —*Ralph Chislett, F.R.P.S., M.B.O.U.*	7
Fungus Foray at Helmsley, 1935—*John Grainger and W. G. Bramley*	8-11
Y.N.U.: Annual Meeting at Sheffield	12
Geological Notes and News—*T. Sheppard, M.Sc., F.G.S.*	12-13
Reviews and Book Notices	13
The Yorkshire Naturalists' Union's Seventy-Fourth Annual Report for 1935	14-24
News from the Magazines	7, 11
Illustration	3
Plate I	

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126 Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED

PERTH STREET WEST, HULL

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post-free 4/-.

A story that faithfully depicts the characteristics of Yorkshire folk, their wit, their capacity for driving a hard bargain, their love of the moors and sea and (for the time is a hundred years ago) their passionate love of smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Happy love and terrible tragedy are intermingled, the whole being relieved by humorous incidents, some of which take place at Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,

5 Farringdon Avenue, London, E.C.4.

YORKSHIRE NATURALISTS' UNION
1930 PRESIDENTS 1936
GREEVZ FYSHER
1930
PROF A GILLIGAN, D.Sc., F.G.S., M.I.M.E.
1932
WILLIAM SAWNEY BISAT, F.G.S.
1935
J. MEIKLE BROWN, B.Sc., F.L.S., F.R.E.S.
1933
E. G. BAYFORD, F.R.E.S.
1936
F. A. MASON, F.R.M.S.
1934
T. PETCH, B.Sc., B.A.
1931

THE NATURALIST

FOR 1936

ON THE GLEN MAYE SHORE

W. LAWRENCE SCHROEDER, M.A.

At my feet a twinkling
Path of light,
Dazzling in its brilliance,
Leads o'er the smooth grey waters
Straight to the setting sun.
Softly outlined cloud
Fading above
Into little wisps
That modestly invade
The pale blue sky,
Stretch far to north and south ;
The water quietly moving,
Laps the stones
With gentle sounds
That seem like whispers
Of a far-off life
That once, with vital purpose,
Trod this bouldery beach.
In the far distance,
Amid the cloud,
Or on the water,—
Hard it is to tell,—
With steady, slow persistence
Move the boats
From out the neighbouring ports :
Gulls, subdued to quietness
In the evening light,
Float, with busy motion,
By the weed-clad rocks.
A silence
Born of Nature's sense
Of passing things,
Holds the evening air ;
For now,
Behind the grim, grey bank
Of cloud,
The light that held my eyes
In trembling fascination,
Has quietly passed ;
The wisps of cloud above,
Hold the memory
Of its radiance ;
But the pathway
To the Kingdom
Is no more :
And in my heart
More vague sad thoughts
Of things that might have been,
And now, are not.

EDITORIAL

THE WILD PLANT CONSERVATION BOARD

THE activities of the Wild Plant Conservation Board have resulted in attention being focussed recently on two points, one of these being the effect of their propaganda and recent legislation on botanists, and the other, the criticism of their fundamental policy in regard to plant preservation.

It is well known that the Board favours the development of legislation which aims at preventing the indiscriminate picking of wild flowers, and in many countries there are now bye-laws protecting most of the more beautiful and the rarer flowers in this way. It appears, however, that while the original draft legislation approved by the Board contained a clause excluding ' *bona fide* botanists ' from this prohibition, the act which finally became law contains no such saving clause. Hence botanists are not exempt from the bye-laws designed to protect wild plants. Now, strictly speaking, there is no good reason why they should be, and there are in addition the difficult practical points of deciding how a ' *bona fide* botanist ' should be defined and how, for example, a local policeman would identify one. But, actually, it has already been found that the activities of botanical societies in the south of England are becoming much restricted by the existence of these bye-laws. For landowners say, in effect, it is against the law to collect wild flowers and hence, do not give permission to visit their lands for botanical purposes.

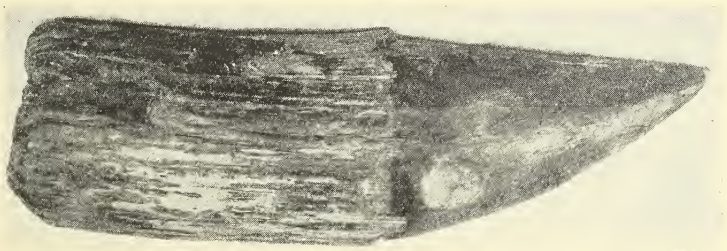
The second point arises out of correspondence in the *Gardeners' Chronicle* initiated by Mr. H. S. Redgrove (Vol. 96, pp. 58-9), who cites some experiments on fritillary bulbs and bluebell bulbs in which it was found that breaking or pulling the flowers annually did not prevent considerable increases in the numbers of bulbs, these increases being as large as those in untouched plants. The conclusion drawn from these experiments is that collecting wild flowers is not likely to reduce their numbers, and hence, that the activities of the Wild Plant Conservation Board are a waste of time. We may suggest that such a widespread conclusion seems unduly premature. Evidence as to what happens in a fertile garden soil need not be of decisive value in considering what happens in nature, where the plants are at times growing on the limits of their habitat range and, where in addition, they are subject to competition from other species. Further, it would seem advisable to consider the effect of plucking flowers such as Wood Anemone, where the foliage is usually damaged also when the flower is taken. Lastly, there is

undoubtedly another source of injury involved in the wholesale collection of wild flowers. This is the injury due to trampling of foliage by the collectors. It may be suggested then that there is a very large field for enquiry in this subject which seems to offer definite scope for botanical societies. In the meantime, the average field botanist will no doubt take a good deal of convincing that such facts as the gradual disappearance of daffodils in the Lake District and North Yorkshire are due to purely natural causes.

RECORD

AN ELEPHANT'S TUSK

An elephant tusk, broken in a curious way, has been dredged from a great depth in the gravel pit at Brandesburton and is now exhibited in the Museum at Hull, through the kindness of Mr. F. Hainsworth, of the Hainsworth Gravel Co., Ltd. It is illustrated in the accompanying block and the curious feature resembling the point of a tusk is caused by a fracture due possibly to shrinkage in the ivory, the layers becoming



separated and detached in this manner. Miss Dorothy M. Bate, of the Natural History Museum, South Kensington, points out that tusks do break in this way occasionally, and what looks like the original tusk point of course is nothing of the sort, as the tusk grows from the jaw and consequently the point is the farthest away from the mouth.

Oddly enough, recent finds include remains of other strange animals, and in the same case are shown a bone of hippopotamus recently found in a gravel pit near York ; bone of rhinoceros from the sandpit at Kirmington ; and part of the horn core of bison from Tarran's gravel pit at Brandesburton.

All these can be seen in the Geological Gallery at the Hull Museum.—T.S.

1936 Jan. 1

YORKSHIRE LEPIDOPTERA IN 1935

GEO. E. HYDE

In spite of an average amount of fine weather in February and March this year, most of the early moths were down in numbers, and below the 1934 figures. Of *Polyploca flavicornis* (Yellow Horned), one of the first spring moths to appear, only three or four specimens were noticed, in spite of careful searching. In some years 15 to 20 examples may be found in a single morning, resting on Silver Birch trunks in a suitable haunt. *Phigalia pedaria* (Pale Brindled Beauty) was also scarce, but an interesting male specimen with all wings partly melanic and partly of the normal brown and greenish-grey tints was found. Dark or melanic examples of this moth outnumber those of the normal hue in South Yorkshire, but specimens like the one mentioned are scarce.

The night-flying Taeniocampieds were far from common, and several visits to favourite Sallow bushes in local woods proved disappointing. These noctuæ moths have a great liking for Sallow Catkins and are sometimes to be seen in large numbers on warm spring nights.

Among the early, night-feeding larvæ the following species were found in about average numbers, but many kinds were certainly scarcer than usual. *Noctua triangulum* (Double Square-Spot), *N. brunnea* (Purple Clay), *N. primulæ* (Ingrailed Clay), and *Triphæna fimbria* (Broad-bordered Yellow Underwing).

Several larvæ of *Boarmia repandata* (Mottled Beauty) were taken and some interesting, dark forms of this varied moth bred from them. As in the case of several other Geometers where melanism occurs, the dark varieties are more often found than the pale forms in the Doncaster district.

The paucity of many moths and larvæ in April and May was doubtless largely due to the spell of severe weather a short time before Easter. *Brephos parthenias* (Orange Underwing) is usually fairly common among Silver Birch in several local woods ; it was scarce this year.

Turning to the early butterflies, we find a similar scarcity compared with last year ; the common ' Whites ' *Pieris brassicæ* (Large White), *P. rapæ* (Small White) and *P. napi* (Green-veined White) and *Euchlœ cardamines* (Orange-tip) were all down in numbers. *Thecla rubi* (Green Hairstreak) and *Hesperia malvæ* (Grizzled Skipper) were about normal in numbers, and several specimens of *Argynnis selene* (Small Pearl-bordered Fritillary) were seen in a North Lincolnshire

locality a few miles from Doncaster. This species had not been noted near Doncaster previously by the writer.

Lycæna aegon (Silver-studded Blue) which is found in one locality in the district was commoner this year than in 1934 or 1933.

The country close to Doncaster is not very good for butterflies, and several species which are common in other districts both north and south, and which one would expect to find here, are absent. *Argynnis aglaia* (Dark Green Fritillary) is the only fritillary regularly found within 15 miles of the town, and it is far from common. *Coenonympha typhon* (Large Heath or Marsh Ringlet) is one of our most interesting species, and like several other kinds it was scarcer this year than in 1934.

Some interesting and handsome dark males of *Odonestis potatoria* (Drinker) were reared in July from larvæ collected near Bawtry. The conspicuous and hairy larvæ of this moth were numerous in several local haunts in May, but they dwindled greatly in numbers as the season advanced. Probably the Cuckoos, which are usually common in the district and seem to like the low, open country where the ' Drinkers ' are found, take a heavy toll of their larvæ. Apparently all other birds shun them on account of their long hairs.

A number of larvæ of the pretty and local *Orgyia gonostigma* (Scarce Vapourer) were collected near Doncaster, in June, and several moths were bred, including a few of the curious and almost wingless females. A single larvæ of this species was taken in 1934 and this produced a male moth, the insect had not been met with earlier by the writer.

Larvæ of the pretty *Xanthia citrago* (Orange Sallow) taken on limes near Doncaster, produced moths in August. Very few *Vanessa io* (Peacock) were seen near the town and *Pyrameis atalanta* (Red Admiral) was much scarcer than in the previous year ; a few larvæ of the last insect found at the end of August produced butterflies in mid-September. *Chrysophanus phlaeas* (Small Copper) usually a common species in August was scarce.

Probably the very dry summer was the cause of many butterflies and moths being down in numbers, certain food plants suffered greatly owing to lack of rain and larvæ died. There is reason to believe that the mild winters of the last two or three years have proved unfavourable to many hibernating larvæ. During spells of mild weather in winter larvæ are more likely to move from their hibernating quarters and be discovered by birds and other enemies.

1936 Jan. 1

EFFECT OF BIRD LIFE ON POND LIFE

ERIC HARDY, F.Z.S.

It will be extremely interesting if aquarists and students of lower invertebrates in fresh waters could keep some sort of observation to see if the great increase in the residents or nesting population of surface feeding species of wild duck, which feed so much on the smaller fresh-water molluscs, has any marked effect on the amount or the distribution of fresh-water fauna and flora. The increase of these ducks has been a phenomenon of our avi-fauna this century and especially have the numbers of shelduck increased in Lancashire, North Wales, Norfolk and Somersetshire, while shoveler and tufted duck have increased as nesting birds, the latter now nesting in fair numbers even on the London park lakes. The number of winter visitors from arctic nesting places has also increased in recent years. On some inland waters I have found in a bird census that the duck population has more than doubled in the last few years. At Knowsley Park Lake, Lancashire, for instance, 14 pairs of tufted duck nested in in 1935, whereas but two pairs nested in 1932 ; and to give an idea of the winter concentration, in addition to tufted duck, pochard, goldeneye, wigeon, teal and shoveler, I counted 1,052 mallard or common wild duck on this famous water one afternoon in November, 1935. All this is bound to have a marked effect on aquatic invertebrates.

Examinations in the Liverpool faunal area showed two teal duck shot in January and April contained seeds of a Carex (sedge), a Cheshire winter mallard contained 300-400 seeds of goosegrass, a pintail duck from Martin Mere, West Lancashire, contained such common estuary molluscs as *Hydrobia ulvæ* and *Malcona*. The stomachs and intestines of 13 wild duck from Norfolk contained 41 seeds of Potamogetons, most of which subsequently germinated in water and the experimental feeding of domestic ducks on *P. natans* proved that 60 per cent. of the seeds passed in their droppings germinated, but that only 1 per cent. of seeds not eaten would germinate. Of 13 ducks examined in London markets, 11 contained 828 seeds including 295 of bur reed (*Sparganium*), 41 Potamogetons, 270 sedges, and 222 unidentified, all the seeds subsequently germinating. Thompson found 4,500 seeds of *Zostera marina* in a British mallard, and Professor Newstead, of the Liverpool Naturalists' Field Club, 300-400 seeds of goosegrass. One gadwall contained 1,200 white water-lily seeds, and another 3,000 of biting persicaria.

Diving ducks will also pick up non-floating seeds from the

bottom of the lake or river. Most important in the distribution of species is that vast numbers of our duck come from abroad. I have found a Soviet ring on a Cheshire mallard, put on it when a nestling at Lake Ilmen, West Russia ; many tufted pintail, wigeon and other wild duck come from Iceland, and our native shelduck visit Holland and Denmark. Any information tending to prove that the great increase in British wild duck in recent years is definitely affecting fauna or flora of our fresh waters, and especially the status of fishes, would be of the utmost value.

GREY PHALAROPE [*PHALAROPUS FULICARIUS* (L.)] IN YORKSHIRE

RALPH CHISLETT, F.R.P.S., M.B.O.U.

THIS species occurs along the Yorkshire Coast in autumn and winter occasionally and spasmodically. Inland, its visits to the county have been still more spasmodic, the known records numbering some 18, of which the majority have been in the West Riding. In almost all cases the bird was observed on water, as one would expect, and generally at a low altitude. These facts make the occurrence of a Grey Phalarope on the high moors (some 1400 feet) above Greenfield, on 30th September last, all the more remarkable. The bird was picked up dead by Mr. G. F. Gee's gamekeeper. Mr. Gee informs me that one side of the face was eaten, the bird emaciated, and that, when found, it had probably been dead for some 7 to 14 days. The breast showed blood but there was no shot-hole, which seems to suggest a disabling accident sustained probably in stormy weather, possibly at night. The bird had only one leg but the stump was quite healed up at the knee joint—' possibly unfortunate as a nestling.' Mr. Gee has handled both Grey and Red-necked Phalaropes before and is quite clear that the bill showed the comparative thickness, with the point reached suddenly, of the Grey species, and did not taper gradually to the point as is characteristic of the bill of the Red-necked Phalarope. The nearest breeding-ground of Grey Phalarope is in Iceland where it is rare, its main habitats being still further North.

The Entomologist for December contains ' *Danaus plexippus* L. in the British Isles,' by C. Nicholson ; ' The Crabtree Collection,' by W. R.-S. ; ' Dragonflies in 1934,' by H. G. Attlee ; ' Nomenclature of Odonata : three generic names of Hagen,' by J. Cowley ; ' A new British species of Lepidoptera Tineina,' by E. Meyrick. (*Aristotelia clinosema*, two examples in Dorset), and numerous notes and observations.

YORKSHIRE NATURALISTS' UNION: FUNGUS FORAY AT HELMSLEY, 1935

JOHN GRAINGER AND W. G. BRAMLEY

THE Mycological Committee of the Yorkshire Naturalists' Union arranged its Annual Meeting at Helmsley, from Saturday, 31st August to Wednesday, 4th September, 1935. A long spell of dry weather preceded the meeting, and this, coupled with the earlier date, probably accounted for the acute scarcity of the larger species. This, however, focussed the attention of members upon the smaller species, which are represented in proportionately larger numbers than usual, in the list below.

The yearly business meeting was held in the Castle Hotel, at 8 p.m., on Saturday, 31st August, with Miss D. Hilary, B.Sc., Chairman of the Committee, presiding. Members learned of the indisposition of Mr. F. A. Mason with sincere regret, and expressed their hope that he would soon return to vigour. Mr. A. A. Pearson, F.L.S., of Tunbridge Wells, was elected Chairman of the Committee for the ensuing year ; the other officers and members remain as before.

Miss Hilary's Presidential Address was entitled ' Some Recent Additions to our Knowledge of Reproduction in the Fungi.' Beginning with the discovery by Craigie, in 1927, of heterothallism in *Puccinia graminis* and fertilisation of two strains of pycniospores (spermatia) before production of the aecidia, she proceeded to deal with the investigation of sexuality in the higher Basidiomycetes. The work of Buller, Brodie and Bensuade on *Coprinus lagopus* (=*C. fimetarius*) was passed under review, and it was shown that the formation of fruit bodies of that species is also dependent upon the union of two strains of mycelium. *C. lagopus* is a coprophilous fungus, growing on cow dung, and mycelial masses of two strains are frequently present in the same patch of dung. Two pieces of hyphæ of different strain, coming into contact, begin to ' diploidise ' each other. Their nuclei divide, and migrate mutually, so that every cell of the mycelium ultimately contains two nuclei, each derived from a different strain. The familiar clamp-connections are the avenues by which migration is effected. Fertilisation, which is a simple union between two nuclei, occurs during the development of the basidium. Diploidisation may also be accomplished by the activities of minute cells known as oidia.

Mr. T. Petch, B.A., B.Sc., spoke on ' Melanospora.' He reviewed the previously-described British species of this genus, and found that there were only nine which had real claim to specific rank. These are *M. caprina*, on dead wood, *M. chionea* on pine needles and straw, *M. leucotricha* on dead leaves, *M. lagenaria* on *Polyporus adustus* and *Fomes* sp., *M. parasitica* on *Isaria farinosa*, *M. zobelii* on truffles, *M. brevirostris* on *Sepultaria sepulta*, *M. sphaerodermoides* on the culms of Hogweed, and *M. episphaeria* on *Hypomyces terrestris*. It is hoped that a fuller account of both lectures will appear in *The Naturalist*.

A Public Lecture on ' Fungi of Farm and Garden ' was delivered by the Hon. Secretary, on Monday night, 2nd September. It was not possible to arrange for the school children of Helmsley to view the collections of fungi, as their holidays extended over the period of the excursion, but the public were invited to view the specimens on Tuesday evening, 3rd September.

The district to be examined was mainly the valley of the Rye, from Helmsley to Rievaulx, including Duncombe Park. This comprised good pasture land with extensive woods where oak predominated. Beckdale provided slightly different conditions, mainly because of the relative dryness. Records from the latter valley are marked B in the following list. The Committee expresses its gratitude to the Earl of

Feversham for kind permission to visit his estate, and is greatly indebted to Mr. R. Gordon of Helmsley, for much help in arranging the excursions.

We are indebted to Mr. Petch and Miss Hilary for help in compiling the records.

HOMOBASIDIAE

PHALLINEÆ

Phallus impudicus (Linn.) Pers.

LYCOPERDINEÆ

Lycoperdon giganteum (Batsch) Pers.
Bovista plumbea Fr.

NIDULARIEACÆ

Crucibulum vulgare Tul.

AGARICINEÆ

Pluteus cervinus (Schaeff.) Fr. (B).
Lepiota procera (Scop.) Fr. (B).
L. cristata (A. & S.) Fr. (B).
Psalliota campestris (Linn.) Fr. (B).
Anellaria separata (Linn.) Karst. (B).
Armillaria mellea (Vahl.) Fr.
Pholiota dura (Bolt.) Fr.
P. mutabilis (Schaeff.) Fr. (B).
Stropharia aeruginosa (Curt.) Fr.
S. semiglobata (Batsch.) Fr. (B).
Inocybe rimosa (Bull.) Fr.
Tricholoma sudum Fr.
Entoloma jubatum Fr. (B).
E. sericeum (Bull.) Fr. (B).
Hypholoma fasciculare (Huds.) Fr. (B).
H. velutinum (Pers.) Fr.
Laccaria laccata (Scop.) B. & Br. (B).
Hygrophorus ceraceus (Wulf.) Fr. (B).
H. chlorophanus Fr. (B).
Gomphidius viscidus (Linn.) Fr. (B).
Collybia fusipes (Bull.) Berk.
C. dryophila (B).
Psilocybe semilanceata Fr. (B).
Pislocybe spadicea Fr.
Panaeolus phalaenarum Fr.
Mycena pura (Pers.) Fr.
M. galericulata (Scop.) Fr. (B).
M. alcalina Fr.
M. sanguinolenta (A. & S.) Fr.
M. galopus (Pers.) Fr. also var. *nigra* Fl. Dan.
M. discopus Lev.
Galera tenera (Schaeff.) Fr. (B).
Psathyrella disseminata (Pers.) Fr.
Pleurotus ostreatus (Jacq.) Fr.
Claudopus variabilis (Pers.) W.G.Sm.
Crepidotus mollis (Schaeff.) Fr.
Russula adusta (Pers.) Fr. (B).
R. fragilis (Pers.) Fr.
R. ochroleuca (Pers.) Fr.
Lactarius tabidus Fr.
L. subdulcis (Pers.) Fr.
Bolbitius fragilis (Linn.) Fr.
Coprinus comatus (Fl. Dan.) Fr. (B).
C. atramentarius (Bull.) Fr.
C. micaceus (Bull.) Fr.
C. radiatus (Bolt.) Fr.
C. plicatilis (Curt.) Fr.
Androsaceus rotulus (Scop.) Pat. (B).
Panus stipticus (Bull.) Fr.

CANTHARELLINEÆ

Cantharellus Friesii Quel.

BOLETINEÆ

Paxillus involutus (Batsch.) Fr.
Boletus elegans (Schum.) Fr. (B).
Boletus viscidus (Linn.) Fr.
B. luridus (Schaeff.) Fr.
B. scaber (Bull.) Fr. (B).

POROHYDNINEÆ

Polyporus squamosus (Huds.) Fr.
P. sulphureus (Bull.) Fr.
P. giganteus (Pers.) Fr.
P. betulinus (Bull.) Fr.
Polyporus dryadeus (Pers.) Fr.
P. hispidus (Bull.) Fr.
P. adustus (Willd.) Fr.
P. lacteus Fr.

POROHYDNINEÆ—*continued*

Fomes fomentarius (Linn.) Fr.
F. ferrugineus (Schrad.) Massee.
F. annosus Fr.
Polystictus versicolor (Linn.) Fr.
Irpex obliquus (Schrad.) Fr.
Trametes serpens Fr.
Daedalea quercina (Linn.) Fr.
Merulius rufus (Pers.) Fr.
Fistulina hepatica (Huds.) Fr.
Stereum rugosum (Pers.) Fr.
S. hirsutum (Willd.) Fr.
S. purpureum (Pers.) Fr.
Hymenochaete rubiginosa (Dicks.) Lev.
Cyphella capula (Holmsk.) Fr.
Solenia fasciculata Pers.

HETEROBASIDIAE

AURICULARIALES

Uromyces valeriana Fckl.
U. geranii Oth. & Wart. on G. *sylvaticum*.
U. alchemillæ Lev.
U. polygoni Fckl.
U. dactylidis Otth.
Puccinia centaureæ DC.
P. obtegens Tul.
P. cirsii Lasch.
P. lapsanæ Fckl.
P. taraxaci Plowr.
P. major Diet.
P. hieracii Mart.
P. valantiæ Pers. on *Galium cruciata*.
P. veronicarum DC. on *Veronica chamædrys*
P. saniculæ Grev.
P. chaerophylli Purt. on *Myrrhis odorata*.
P. violæ DC. on *Viola riviniana*.
P. buxi DC.
Puccinia obscura Schrot. on *Luzula sylvatica*.
P. oblongata Wint. on *L. campestris*.
P. lolii Niels. on *Avena elatior* *Holcus mollis* and *Festuca elatior*.
P. sessilis Schneid. on *Phalaris arundinacea*.
P. baryi Wint.
P. variabilis Grev.
Phragmidium fragariastri Schrot.
P. disciflorum James on *Rosa* sp.
P. violaceum Wint. on *Rubus* sp.
P. rubi Wint. on *Rubus* sp.
Triphragmium ulmariæ Wint.
Coleosporium tussilaginis Tul.
C. petasites Lev.
Melampsora caprearum Kleb.
M. betulinum Kleb.
Urocystis anemones Schroet. on *Ranunculus repens*.
Auricularia auricula-Judæ (Linn.) Schroet.

TREMELLALES

Tremella mesenterica (Retz.) Fr.
Exidia glandulosa (Bull.) Fr.

CALOCERALES

Dacryomyces deliquescens (Bull.) Duby.
Calocera cornea (Batsch.) Fr.
C. stricta Fr.

ASCOMYCETES

PLECTASCALES

Erysiphe graminis DC.
E. tortilis Fr. on *Cornus*. Sp.
E. polygoni DC.
Sphaerotheca pannosa Lev. on *Rosa* sp.
Podosphaera oxyacanthæ DB. on *Spiræa ulmaria*.

PYRENOMYCETALES

Hyponectria buxi (Desm) Sacc. on Box.
Nectria peziza (Tode) Fr. on *Polyporus squamosus*.
N. coccinea (Pers.) Fr. on Sycamore.
N. cinnabarina (Tode) Fr. on Sycamore.
Hypomyces aurantius Pers.
Hypocrea pulvinata Fuckel.
Hypoxylon coccineum Bull.
H. fuscum (Pers.) Fr.
H. multiforme Fr.
Xylaria hypoxylon (Linn.) Grev.
X. polymorpha Pers.
Ustulina vulgaris Tul.
Leptospora ovina Fckl.
Phyllachora dactylidis Delacr.
P. graminis Fr.

DISCOMYCETALES

Rhytisma acerina Fr.
Ascobolus furfuraceus Pers.
Chlorosplenium aeruginosum Fl. Dan.
Helotium virgultorum Karst.

TUBERALES

Onygena equina Pers.

VALSACEAE

Valsa ambiens Fr.

FUNGI IMPERFECTI

Trichothecium roseum (Pers.) Link.
Rhopalomyces candidus B. & Br.
Cladosporium herbarum (Pers.) Link.
Spicaria farinosa (Holms.) Petch, simple form on spiders and flies *Isaria* form on pupa and lepidopterous larva.
Stilbella tomentosa (Schrad.) Lindau on *Trichia* sp.
Hirsutella eleutheratorum (Nees) Petch on beetle larvæ.
Hymenostilbe arachnophila (Ditm.) Petch on spiders.
Gibellula aranearum (Schw.) Syd. on spider.
Volutella buxi (Corda) Berk. on Box leaves.
Diplodia ilicis Fr.
Sepedonium chrysospermum (Bull.) Fr.
Stilbum erythrocephalum Ditm.

PHYCOMYCETES

Peronospora myosotidis DB.
Phytophthora infestans deBary.
Entomophthora dipterigena Thaxt.
E. variabilis Thaxt.
Entomophthora aphrophoræ Rostrup. on Hemiptera.
E. sphaerosperma Fr. on flies, ants and ichneumon.

MYXOMYCETES

Ceratiomyxa fruticulosa Macbr.
Physarum cinereum Pers.
P. nutans Pers.
Stemonites fusca Roth.
Comatricha nigra Schroet.
C. rubens. List.
Lycogala epidendrum Fr.
Reticularia lycoperdon Bull.
Trichia varia Pers.
T. decipiens Macbr.
T. affinis deBary.
T. persimilis Karst.
Arcyria denudata Wettst.
A. incarnata Pers.
A. nutans Grev.
A. pomiformis Rost.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for December contains ' Miscellaneous observations on the biology of *Apanteles glomeratus* L. (Braconidæ),' by A. G. Hamilton ; ' Two species of Coleoptera new to Britain,' by H. Donisthorpe (*Ocalea puncticollis* Muls. from Windsor Forest and *Sitones decipiens* Lindbg. and Tiree) ; ' A new genus and species of Passalidæ (Col.) from Australia,' by W. D. Hincks and J. R. Dibb ; ' A note on the genus *Lithinus* Burr. (Dermaptera),' by W. D. Hincks ; ' A North American jassid (Homoptera) in Surrey,' by W. E. China. (*Graphocephala coccinea* Forster at Chobham on Rhododendron), and ' Records of various Diptera captured between 1929 and 1935,' by A. M. Low.

YORKSHIRE NATURALISTS' UNION:
ANNUAL MEETING AT SHEFFIELD

This meeting was held at the University, Sheffield, on Saturday, 7th December, 1935. The attendance suffered somewhat by the heavy fogs in certain parts of the country but twenty of our affiliated societies were represented. We were received by the Vice-Chancellor, Dr. Pickard-Cambridge. In his opening address he said that the work of the universities was really built up on that of the field naturalist, ecologist, zoologist, botanist or whatever kind of naturalist there might be. Without their work the work of the universities would be impossible ; he added ' From my earliest childhood the chief recreation of my life has been the study of natural history.' Dr. Woodhead in thanking the Vice-Chancellor reminded us that English students of the spiders were still relying on Dr. Pickard-Cambridge's father's book entitled *The Spiders of Dorset*. The presidential address on ' The Drift Succession in Mid and East Yorkshire ' was given by Mr. W. S. Bisat and a resumé will be published in this journal . In thanking the President Professor Fearnsides said that it was perhaps as well that such an address was not open for discussion, for in the past the subject led often to heated debates. The biological and botanical staffs of the University combined with the members of the Sorby Society in providing a most interesting series of exhibits. In the botanical department we saw apparatus working illustrating many phases of plant physiology, and herbarium specimens of Lapland plants collected by Dr. Lind.

In the Zoological rooms an exhibit of living marine animals claimed most interest and included Amphioxus, Tunicates, Nudibranchs, Anemones, Corals, Sea Urchins, Star and Brittle Starfish, Prawns and Crabs, there were also fresh-water Crayfish, Spotted Salamanders, Axolotls, species of frogs and cockroaches. Among the Sorby Society's exhibits were plants, mosses, especially Sphagna, interesting insects, including Lacewings, May-flies, Caddis-flies, and geological specimens. Some lantern slides made by Sorby from the actual specimens of Seaweeds, etc., were on view and showed what is possible by this method of illustrating the subject.

At the meeting of the General Committee it was announced that Mr. E. G. Bayford had consented to be our President for 1936, and the Barnsley Naturalists' Society invited the Union to hold the next Annual Meeting at Barnsley. This was agreed to with much pleasure.

Other officers of the Union were re-elected. A pleasing feature was the election of eleven new members, the Treasurer pointing out the need for funds which can only come by an increase of membership. The Field Meetings in 1936 will be at Marsden, Coverdale or Hawes, Aberford, Hackness and Pocklington.

GEOLOGICAL NOTES AND NEWS

T. SHEPPARD, M.Sc., F.G.S.

Mr. C. W. Wright has a note on ' The Chalk Rock Fauna in East Yorkshire,' in *The Geological Magazine* for October.

Dr. Alfred Harker, F.R.S., who was formerly intimately connected with this Journal, has been awarded the medal of the Royal Society for his work on Petrology. Dr. Harker compiled the Bibliography of the Geology of the North of England which appeared in *The Naturalist*, before these were taken in hand by Mr. T. Sheppard.

In *The Cardiff Naturalists' Society Transactions*, recently issued, Dr. F. J. North has an illustrated memoir on Dean Conybeare, Geologist, which has many references of interest to northern geologists, including

a caricature by Conybeare, showing Dean Buckland entering Kirkdale Cave with live hyenas around him.

At a recent meeting of the Geological Society of London, a paper was read on 'The Pleistocene Geology of the Area between the Tees and the Trent,' by J. S. Gayner and S. Melmore. The Pleistocene detritus in Ryedale above Helmsley is described. A study of its distribution leads to the conclusion that at one time the surface of 'Lake Pickering' stood at between 300 and 400 feet O.D. This being so, the water must have overtopped a large part of the Howardian Hills, and evidence derived from these hills has proved this inference to be correct. Erratics of easterly derivation, now found at the same altitude on the western side of the Vale of York, have been known for a considerable time, and support the conclusion that 'Lake Pickering' and 'Lake Humber' formed one sheet of water. Lacustrine deposits in South Durham, of which those representing the deeper water facies extend to a height of 250 feet O.D., are described in detail. As the result of this work, a number of conclusions have been reached, including the following: (1) a 'Lake Humber,' the surface of which stood at a height of over 300 and not far short of 400 feet O.D., existed in late Glacial times; (2) even after the retreat of the Stainmore glacier from the Vale of York and the Tees Basin this lake was still in existence, and its surface still at about the same level; (3) the land ice was in retreat before the North Sea ice-sheet had begun to withdraw.

No. 37 of "The Geological Literature added the the Geological Society's Library during 1935," has been published. It seems to be more massive than ever, and has 330 pages of small type containing a year's contribution to Geology, which makes one wonder whether work of this sort is not being slightly overdone!

REVIEWS AND BOOK NOTICES

Plant Life, by **D. B. Swingle,** pp. 441, 291 illustrations. (Chapman and Hall). This text book of botany covers a very wide range of subjects in a lucid and elementary manner, and its notable features are two, firstly the range of subjects treated and secondly, the number and excellence of the illustrations. These amplify almost every point discussed. The treatment of the subjects is adequate but not exhaustive. The book should prove a useful work for students or for those requiring general botanical information.

A Text Book on Forest Management, by **M. R. K. Jerram,** pp. 156. (Chapman and Hall), 10/6. While this is not a book for everybody, it is undoubtedly one which will appeal to those interested in practical forestry. It gives in concise form the broad principles involved in forest management, with special reference to the principles underlying the control of forests for working purposes and for estimating financial yield. While written primarily for students of forestry, it may well prove to have a wider appeal, as it embodies modern principles n concise and not too detailed form.

Practical Botany, by **Wm. Leach,** pp. 160, 23 text figures. (Methuen & Co.), 4/- net. This is primarily a book designed for students of botany at the level of school leaving and university entrance examinations. It is devoted entirely to practical work mainly on plant structures of different types but including also adequate elementary physiological experiments. It gives clear instructions for working and also for the preparation of the necessary reagents. The latter feature is very well done and would prove extremely useful to amateur microscopists who desire information on staining and preserving plant structures. The book may be safely recommended for school or home use.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-FOURTH ANNUAL REPORT FOR 1935

(**Presented at Sheffield on Saturday, 7th December, 1935.**)

The Seventy-third Annual Meeting was held in the Technical College, Bradford, on Saturday, 8th December, 1934, and the Annual Report which was presented there was printed in *The Naturalist*, January, February, and March, 1935, pp. 18-24, 38-48, 63-71.

The Presidential Address on ' Some By-paths in Mycological Study ' was delivered by Mr. F. A. Mason, F.R.M.S., and will be found in *The Naturalist*, 1935, pp. 9-17.

The Presidency for 1936 has been offered to and accepted by Mr. E. G. Bayford, F.R.E.S., for his work among the Coleoptera and other orders of insects and for his long and valuable services to our Union.

Field Meetings have been held in 1935 as follows :—S.E., Hornsea, 20th to 22nd April ; N.W., Tanfield, 11th May ; M.W., Bentham, 8th to 10th June ; S.W., Langsett, 6th July ; N.E., Hovingham, 3rd to 5th August ; Fungus Foray, Helmsley, 31st August to 4th September. The Botanical Ecological Committee had a meeting at Austwick, 11th June. The Vertebrate Section met in Leeds on 16th February and 19th October. The Entomological Section and the Plant Galls Committee had a field meeting at Buttercrambe, 22nd June.

The Excursions for 1936 will be as follows :—

25th April. Drop Clough, Marsden, V.C. 63.
30th May and 1st June. Coverdale, V.C. 65.
20th June. Aberford, V.C. 64.
11th July. Hackness, V.C. 62.
1st-3rd August. Pocklington, V.C. 61.

The following changes of address have been notified during the year :—

Prof. A. E. Boycott, F.R.S., Ewen Farm House, nr. Cirencester.
Mr. J. Burnett to Thwaitefield, Goathland.
Miss J. Grainger to Shenstone, Wilshaw Road, Meltham.
Mr. C. Green, 443 Beverley Road, Hull.
Mr. J. H. Lumb, 1a Clarendon Place, Hopwood Lane, Halifax.
Mrs. E. M. Quayle (*née* M. Wray), Redthorne, High Street, Bewdley, Worcs.
Mr. L. Smith, 36 Kenilworth Avenue, Cottingham Road, Hull.
Mr. R. A. Webb, 40 The Grove, Hipperholme, Halifax.

Membership.—The following new members have been elected during the year, making a total of 306 :—

Mr. A. C. Bentley, B.Sc., 27 Ayresome Terrace, Street Lane, Leeds.
Mr. W. S. Bisat, F.G.S., North Ferriby, Hull.
Mr. A. Broadbent, 114 Huddersfield Road, Meltham.
Mr. W. Glynn Burton, Topcliffe, N. Yorks.
Mr. Browston Bussey, 3 Bankfield Drive, Shipley.
Mr. E. Dearing, 135 Park Road, Elland.

Miss E. Gallwey, Armitage Gardens, 286 Almondbury Bank, Huddersfield.
Lieut. Kay Goudie, No. 26 (A.C.O.) Squadron, Royal Air Force, Catterick.
Mr. J. F. Graham, The University, Leeds.
Mr. A. A. Haley, F.G.S., Grove House, Walton, Wakefield.
Mr. J. E. Hemingway, B.Sc., Ph.D., Geological Department, Leeds University.
Mr. M. P. Ramsey, B.Sc., Rothwell Grammar School.
Mr. T. B. Reynoldson, The University, Leeds.
Mr. R. A. Webb, Keble College, Oxford.
Mr. J. Wright, 23 Bonegate Road, Brighouse.
Miss R. Yeoman, Brompton, Northallerton.

Affiliated Societies.—The Milnsbridge Naturalist Society have become associated with our Union, making the number of associated Societies thirty-eight, with a membership of 3150, bringing the total strength of the Union to 3456.

Obituary.—During the year we lost a Past President, Mr. A. H. Pawson, and another very old member, Mr. M. H. Stiles, also Mr. J. Burnett and Mr. Sam Clough.

Delegate to the British Association and also to the **Wild Plant Conservation Board of the Council for the Preservation of Rural England**, Mr. Thomas Sheppard, M.Sc.

Mr. Sheppard writes : The representative of the Yorkshire Naturalists' Union had the privilege of taking the Chair at the two Conferences of delegates of the Corresponding Societies at the British Association Meeting held at Norwich in September.

At the first Conference Professor P. G. H. Boswell gave an address on ' The Preservation of Sites of Scientific interest in town and country planning,' which was circulated among the members, and a copy of which has been sent to the Library at the Leeds University.

Other items were Mr. Frank Leney describing ' The Norfolk Room Dioramas in Norwich Castle, their purpose and achievement ' ; Lord William Percy gave a cinematograph exhibition showing the ' Life of the Bittern and Heron in Norfolk ' ; Dr. L. Dudley Stamp referred to the ' Land Utilisation Survey of Britain ' ; Dr. Sydney H. Long described ' The Bird Sanctuaries in Norfolk ' ; and Miss C. A. Simpson spoke on ' A Regional Study in the Cotswolds.'

The Naturalist.—The Editors again report a shortage of contributions dealing with field work, and the actual number of contributors is small in relation to the membership of the Y.N.U. It is felt that a good deal of valuable work must go unrecorded every year and it is hoped that all active members will do their best to encourage working naturalists to write accounts of their observations for publication in the Journal of the Union.

VERTEBRATE ZOOLOGY SECTION

West Riding (H. B. Booth) : Ornithological Report.—It has been the worst year that I ever remember for mortality amongst certain species of young birds, chiefly for those whose food had to be obtained from the ground, such as Starlings, Song Thrushes, Lapwings, etc. On 17th May we had a very heavy snowstorm, which appeared to attain its

greatest severity in Upper Wharfedale, where the snow was reported to be 6 in. deep at Grassington (it was fully 3 in. on the level at Ben Rhydding). Many gamekeepers reported that most of the young Red Grouse had been destroyed ; the eggs were hatching at the time. The heavy bags on 12th August proved that they were wrong.

The snow, which quickly melted, was not half so bad for many nestlings as were the two dry spells, with hard-baked ground, which preceded and followed the storm.

As a contrast, the birds that capture their food in the air would appear to have done exceptionally well, judging from two excellent notes from the Rev. C. F. Tomlinson. By careful observations at different times he calculated that there were 12 pairs of Swifts nesting in the Bolton Abbey buildings. On 20th July he and a friend carefully counted 48 Swifts flying high in the air, which looked as if each pair had brought off its full complement of young. More convincing still was a pair of Swallows in a shed behind his rectory, which reared 15 young from three nests of five eggs in each nest—I should think almost a record. The following are the data :—

	Incubation began.	*No. of Eggs.*	*Fledged.*	*No. of Fledglings.*
First brood	31st May	5	30th June	5
Second brood	3rd July	5	8th Aug.	5
Third brood	14th Aug.	5	20th Sept.	5

Herons.—This year there were 25 nests in Lord Wood, Gargrave, an increase of four nests on last year. There were six nests in Harewood Park, and four or five nests in Kirk Ghyll Wood, Hubberholme. The Herons have left the wood near Bolton-in-Bowland owing to tree felling and persecution. A local farmer who for several years has taken an interest in the Herons told me that there were two or three pairs breeding somewhere near to Bolton-in-Bowland, as he constantly saw the birds passing over. He indicated the direction, but I failed to locate them in the many small woods in that neighbourhood. At Grass Woods, although a few Herons were about, no nest could be found. At Healaugh the first nest was seen in 1920, four or five nests in 1928 (*British Birds*, Vol. XXII, p. 291), and 11 nests in 1934 (*The Naturalist*, 1935, p. 40). Mr. R. Butterfield writes that Herons have frequented Holden Gill Wood for several years, but no nest has been found. The heronry at Rossington, near Doncaster, appears to be extinct, chiefly owing to tree felling. Mr. A. Hazlewood informed me that there was only one nest in 1934.

Great Crested Grebes.—The pair have returned to Malham Tarn this year in spite of the presence of five Swans. The pair at Coniston Cold have nested again, but there was not any sign of them this season at Eshton Tarn. The Grebes on the reservoirs have done very badly, probably owing to the lowering levels of the water caused by the drought. On Chelker the two pairs have laid eggs more than once with no result, and on Gouthwaite the nests of the two pairs there were left high and dry, and the eggs from one nest rolled on to the mud below. At Ryhill, near Wakefield, in July, we counted 18 adult Great Crested Grebes on the water and not a single young one. On questioning the water bailiff, he said there had not been any chicks this summer, but he did not know the reason. I have never seen the upper reservoir, on which the Grebes were, so low before. On the lake at Walton Hall the pair succeeded in rearing two young ones. The usual two pairs were on the lake at Harewood.

Black-headed Gulls.—The nesting site at Pinhaw, near Crosshills, which is only a nesting station of a few years standing, is increasing rapidly, and we calculated there would be about 400 pairs. Mr. W. J. Forrest, who waded through the swamp, counted 254 nests with eggs in,

and there were also a few newly hatched chicks about. At Keasden, near Clapham, the larger pond, where most of the Gulls nested, and where usually there were a few family parties of Teal, and once a Garganey and her family, has been drained, and there were no Gulls there. On the smaller pond there would be about 150 pairs, and as their nests mostly contained fresh eggs on 9th June, it was evident that their first layings had been raided.

Rooks, etc.—At the Steeton rookeries Mr. Sam Clough counted 312 nests on 14th April against 297 last year. The young Rooks have not been shot for several years. As a remnant of the Ilkley rookeries, eight nests were built near the old bridge and one in the grounds of Ilkley Hall, but so far as I could judge only three of them were occupied. On the keeper's ' gibbet ' at Malham Tarn were seven Carrion Crows and the heads of numerous Gulls (chiefly Lesser Blackbacks), but I was pleased to see that there were not any Ravens this year.

Nesting Notes.—A pair of Shovelers nested at the lake in Denton Park this year for the first time, and a pair again nested at Coniston Cold.

A Dunlin's nest on a moor in Upper Airedale ; the eggs were ' chipping ' on 26th May.

There were seven adult Whooper Swans on the lake at Harewood, two of which were followed with five young cygnets on 22nd June. It is worth noting that for two or three years now the cygnets have not been pinioned, as they always were formerly.

Mr. H. Thornton reports that the Short-eared Owl has again nested on the moors near Ripponden.

In spite of protection the Peregrine Falcon is decreasing as a nesting species in our fells. I only know of one nest where the young have got off this year—perhaps there may have been another one.

Records—Mr. R. Chislett informs me that a Grey Phalarope was picked up dead and in an emaciated state by Mr. G. F. Gee on 30th September above Chew reservoir, near Greenfield, at an elevation of over 1,200 ft.

Mr. R. Butterfield reports that a Black Tern was seen angling for Minnows in the river at Keighley in May.

Many more flocks of Bramblings were reported in this district last winter than usual. This was possibly owing to a heavier crop of Beech mast.

Of the summer migratory birds the Spotted Flycatcher and the House Martin continue to return in lesser numbers. Two large and old-established colonies of the latter in Upper Wharfedale have become so reduced that they did not contain a single pair of House Martins this summer.

Mr. A. Gilpin has continued his observations on Eccup reservoir. He saw the first Golden Eye on 14th October, 1934, and the last on 13th April. Between these dates there were usually one or two present. The largest number seen was on 25th November, when there were eight birds, three of them being adult males. The first Goosander seen was on 3rd November—an immature male—and the last seen was on 13th April, the most present at one time being 26 on 24th February, 11 of which were adult males. Generally some Shovellers were on the water, sometimes as many as 30. On 18th November, 1934, he saw a single Black-necked Grebe and on the same date a Pintail, another on the 13th and a pair on the 20th of January.

Messrs. G. E. Edwards, V. S. Crapnell, F. Murgatroyd, and their friends have frequently visited the reservoirs of White Holme (1) and Fly Flatts (2) with good results. At High Royd sewage works they report a Wood Sandpiper on 25th May, and on 25th August a Reeve (2). The birds were very tame, and I understand that small cinema films

were obtained of them. Two Grey Plovers and four Sanderlings (1) on 15th September, and 14 Turnstones (1) were seen by Mr. Crapnell on 28th August. Two Curlew Sandpipers (1) on 15th September, and one at the same place, 22nd September. Greenshanks were present in parties of one to three in August (1), and a Jack Snipe (2) on 29th September. Two Black Terns (1) on 15th September, and one (1) on 21st September. Three Common Scoters (2) on 23rd July, and five (1) on 24th August.

Two more Greenshanks were seen on the Elland sewage works in August by Mr. E. Dearing, who, together with Mr. H. Spencer, identified a Greenland Wheatear.

East Riding (C. W. Mason) : The East Riding birds have again had a very successful season, but the drought has had its effect, particularly among the Pheasants and Partridges, for many good-sized young birds have died ; but this is no doubt due more to the lack of insect food than to the want of water. The birds of the Flamborough Cliffs, and particularly at Bempton, attract most attention. During the nesting season the climbers now gather eggs on Sundays, as well as all the week, and many people from inland towns, make a day excursion to the cliffs ; from these visitors and collectors the climbers must do better than in the past.

The Peregrine has not been seen this year at the cliffs. The Gannet, Hoodie Crow, Cormorant, Kestrel, and Lesser Black-backed Gull have been noted. The Fulmars are slightly on the increase, and also the Puffins.

The Guillemot and Razor-bill are not so numerous. The Kittiwake Gull is increasing all along the cliffs. The Herring Gull is also numerous, it nests near Filey, where it is increasing greatly in number. It is pleasing to note that less oil has been seen along this coast this year, though I was informed that eggs had been brought up the cliffs covered with oil. I have visited both Hornsea and Spurn, the watchers reports presented by Mr. C. F. Procter give full particulars of these ; but in passing I should like to record the nesting of the Lesser Tern, inland near Kilnsea beacon, on the sun-cracked mud patches in a pasture field, photos of which I possess. The reason of this movement is due to the number of visitors on the shore, near their old nesting site. Now the birds get no disturbance. On this particular patch, the Oyster-catcher also nested, and near-by also the Redshank and Green Plover.

A White Swallow has been seen by us for the second season near Brandesburton.

Pink-Footed Geese were seen over Hull for the first time on 11th October, and since then skeins are seen every day flying in the district. This year they are visiting the coast lands, as well as the Wolds for feeding.

Wood Pigeon—large migrations of these were observed on 12th October along the coast and inland, whilst Mallard are appearing in districts where in other seasons they have not been seen.

Golden Plover and Lapwing are appearing in their usual large flocks.

Landrail has not been heard in this district. The Cuckoo has not been so common as previous years. The Swift is more common than it used to be, and Swallows and House Martins are on the increase, as also are many of our common small birds.

Wheatear, a good many seen in the Spring and Autumn migrations, and it has nested in the district.

North Riding (W. J. Clarke) : During 1935 the usual fluctuations in the numbers of certain species have been observed. Among species which have shown an increase in their numbers are Goldfinches, which have been more abundant in the Scarborough area, and are reported to have never been more numerous near Whitby. Magpies and Jays show

an increase throughout the district, and the winter flocks of Lapwings have been very large. Common Sandpipers have shown an increase in the Scarborough district, and more pairs of Woodcocks have nested there. Spotted Flycatchers were also more numerous during the summer months.

Species which have shown a decrease in numbers include Greenfinches, which have been scarce for several years ; Landrails, of which only two have been heard in the Scarborough area, and they did not stay to nest, Wood Warblers, Coots, of which only a single pair nested this year at the Scarborough Mere, Whinchats, Chiff-Chaff, Pied Flycatcher, and Little Grebe. Sand Martins were scarcer, and House Martins much scarcer. The number of Swallows was not up to the usual standard. Common Buntings, which have been very scarce for some years, still remain so.

A Starling caught at sea on the s.t. *Merlin* on 20th March, 1935, bore a ring inscribed ' Askov Gaard, Viborg, 118 (37) 13, Danmark Eur.' It was ringed as a young bird at Asserbo, near Frederiksvolk, North Sjaelland, Denmark, on 31st May, 1933.

An Albino Sparrow, mostly of a good clear white, but with some brown feathers in scapulars, secondaries, and tail, with yellow beak and very pale legs (I cannot see if it has pink eyes), has lived about my garden for eighteen months. It has got whiter with age, and did not breed during the Spring. The normal Sparrows with which it associates do not exhibit any animosity to it.

Many Bramble Finches were seen at Scarborough in January and February, 1935, and a large number frequented the Whitby district during the early autumn of 1934, none later.

Bullfinches have shown a welcome increase in the woods around Scarborough, where they have been scarce in recent years.

Reed Buntings nested in several places in the Scarborough area. A few Snow Buntings were seen near Whitby.

A single Nuthatch has lived in the Whitby district for more than a year. Two pairs of Blue Titmice nested in the straw cover of the same bee-hive near Scarborough and reared some 16 or 18 young ones without interference by the bees.

Dippers nested in all their usual sites about Scarborough, excepting one at Hackness which was not tenanted this year.

Stonechats have nested in many places on the moors near Whitby, and have also been a little more plentiful in the Scarborough area.

The first Swifts were seen on 16th May, 1935, they stayed very late in the Autumn, small parties being seen at Scarborough on 14th, 15th, and 22nd September, and the last two on 11th October, a late date. They were seen at Whitby as late as 1st October, when three birds were observed.

Several pairs of Kingfishers nested near Scarborough and Whitby. In one case, near the latter place, the young did not leave the nesting hole until 12th August.

Barn Owls have reappeared in the Scarborough district, where they had got very scarce. They have not been so numerous as usual at Whitby.

Hen Harriers have appeared on the North Yorkshire Moors this year. Mr. E. A. Wallis saw a male bird at Ravenscar on 5th February, and Mr. Rowntree and Mr. Wallis saw another at Yedmandale on 21st April. A young female was shot near Whitby in December, 1934, and others were seen during the winter.

A number of Shags frequented the harbour at Scarborough during the Winter. Eleven were there together on 9th February, 1935. They were occasionally joined by a Common Cormorant.

Many Wildfowl congregated in suitable places during the Winter. Mallards, Pochard, and Tufted Duck frequented the Scarborough Mere. At Lockwood Beck Reservoir, near Guisborough, Wigeon congregated

in varying numbers ; a few Tufted Duck and Pochards in parties of 8 to 20 were also noticed.

Very few Common Scoters were seen on the coast during 1935. They are much less abundant than in former years.

Teal were present in all their usual moorland nesting haunts, but no nests or young birds were seen this year.

Curlews and Golden Plover were present on the Moors in their usual numbers.

An Iceland Gull in second year's plumage was in Scarborough harbour on 25th February, 1935, and a first year's Glaucous Gull was seen there on 5th March.

Black-headed Gulls nested in hundreds at their usual moorland site, and appeared to be doing well, many nests containing eggs being observed both on the islands, and the margins of the pool.

Fulmar Petrels arrived at Scarborough Castle cliff on 1st January, 1935, when eight were counted. Later they became more numerous and E. A. Wallis counted 35 pairs in July. This is probably much below the actual number inhabiting the cliff. The bird is decreasing in the Whitby cliffs, and has deserted places where it has nested for several years past.

A Sclavonion Grebe was seen in Whitby harbour in December, 1934.

Turtle Doves have been plentiful in the woods around Scarborough. One young one was captured near Whitby in June ; another was seen at the same place in July.

Red-legged Partridges nested in one or two places in the district. Some were shot near Whitby in September, 1935, and a pair with a brood of 16 to 18 young was seen at Stainton Dale in July. At least one migrating bird was caught in an exhausted condition at Scarborough.

A covey of six Quail was seen near Aisleby in December, 1934, and a small party was flushed near Hinderwell in September, 1935.

Red Grouse are recovering from the epidemic of 1931, and have been fairly abundant during 1935.

Oiled birds have been more or less in evidence all the year, especially about the second week in January, 1935, the second week in March, and the second week in October, 1935. The species observed were chiefly Guillemots, with one or two Razor-bills and Puffins.

Thanks are due to Messrs. A. S. Frank and F. Snowdon, of Whitby, T. N. Roberts, and E. A. Wallis, of Scarborough, for notes used in the compilation of this report.

York District (S. H. Smith) :—The opening months of the year were distinguished by gales of wind, accompanied by showers of snow and sleet, which delayed the arrival of most summer visiting birds, and the recorded date of arrival of most local species was generally later than usual. The cold spell lasted until June, and I have a note to the effect that 16th May was a full day of heavy snow showers.

The Swallow tribe has not yet recovered its average numbers, and nowhere in this district have any of the various species been common. There appear to be cycles of plenty and scarcity, and we may now be approaching the end of the scarce period which has obtained for some years.

A pure white variety of House Martin was seen at Howsham Bridge during August.

Landrails are still very rare, and I cannot locate more than ten as having come within my own observations.

Two pairs of Curlews frequented Strensall Common, and another pair were located on Alne Moor, but it is doubtful that any of them nested.

Kingfishers are increasing in number around York, although I know a lot are killed every year. One pair nested at Haxby.

Dippers also survive in spite of angler enemies, and they have been noticed at Crambe, Byland, Helmsley, and many other places.

Herons nested in their usual haunts at Healaugh and Pickering, and may often be seen going to and returning from their fishing expeditions.

Nightjars have gradually decreased for several years. Two pairs are reported at Sandburn, and one pair at Huntington ; another pair nested at Skipwith.

Cuckoos have been extraordinarily plentiful, particularly at Strensall and Suet Carr.

Little Owls have now thoroughly established themselves around York, and many nests have been found. The species is considered very harmful to game, and most determined efforts are being made to keep their numbers down.

Long-eared Owls, Tawny Owls, and Barn Owls are all very common, and three young Barn Owls were often seen hawking for Sparrows during the day-time in a stack yard near York. Many nests of all these species have been observed this year.

A Lesser-spotted Woodpecker was seen in Sandhutton Lane on 14th April by Mr. Vear, and later in the day another observer confirmed the identity.

The nest of a Mistle Thrush with three eggs was found at Sandhutton on 28th March, and that of the Song Thrush with three eggs on 14th April, this nest being built on the ground, where it remained a further five days, when it was destroyed, presumably by a Grey Squirrel.

Three pairs of Long-tailed Tits nested at Sandhutton, and a pair of Sparrow Hawks reared four young in the wood near Four Alls.

Chaffinches were very numerous around York, and a curious fact came under my notice where a cock Chaffinch that had confidently picked up bread crumbs in a workmen's hut at Stamford Bridge was disturbed by a dog appearing in the doorway of the hut ; the bird flew to the rafters, the dog gave an excited bark, and the Chaffinch dropped dead to the floor, apparently from heart failure.

A pair of Lesser Redpolls nested near Sandhutton, and I found one of these birds dead in my garden early in May, probably from exposure, the weather being very stormy and cold.

The woods at Coxwold held broods of a pair of Wood Wrens, two pairs of Garden Warblers, and a pair of Blackcap Warblers.

A nest of the Common Bunting was found at Towthorpe, and a walk along the River Foss bank disclosed Sedge Warblers and Reed Buntings.

Little Grebes have been seen on most of the local ponds, and there were three of this species on the lake at my house at Heworth during June.

A pair of Tree Creepers nested in a box in a garden at Huntington and reared four young, and other boxes found homes for Blue Tits, Cole Tits, and Great Tits.

Great-Crested Grebes nested near York as follows : one pair with two young ones on the Hob Moor ponds ; one pair at Aldersyde, no young reared ; and one pair on the main brick pond at Elmfield, no young reared—the pond is very exposed and the Grebes, judging it lacked security, left after a short stay. Two pairs were seen on the great lake at Castle Howard, one pair of which reared four young.

There was a noticeable increase in Golden Plovers during spring and autumn ; large flocks frequented fields at Haxby during January and February, and I saw a flock of more than one hundred at Raskelf in late September and October. They do not nest here.

Wild Geese often pass over York too high to be sure of their identity, but probably Pink-footed Geese. Many hundreds flew over during the night of 6th March, the weather being clear and still and the Geese travelling east to west. A large flock passed over during the even of 12th September ; my informant does not state the direction of flight.

1936 Jan. 1

A Nightingale frequented my garden at ' Willowsyde,' York, for a few days in June, 26th to the 30th, probably on its passage south. The song period being over, the bird emitted a short trill note only at long intervals ; the time the bird was usually trilling being from 1 o'clock to 2 o'clock a.m.

Green and Great-spotted Woodpeckers nested at Strensall, and numbers of Magpies, Carrion Crows and Jays were observed at this well-known bird haunt.

Sparrow Hawks were not so much in evidence as in past years, and the handsome Kestrel Hawk is as common as one can expect where the species has so many enemies.

Mallard, Tufted Ducks, Pochards, and Shovelers have all nested successfully at Skipwith, but were somewhat handicapped by the low state of the ponds they frequent. The Gull ponds harboured their usual complement of Black-headed Gulls, and although raiders destroyed numbers of their eggs, between six and seven hundred pairs nested there.

Lapwings are very plentiful around York, and large flocks can be seen in all their usual haunts.

Partridges have had a splendid nesting season and many big coveys have been seen.

Pheasants suffered during the drought, and ' gapes ' was prevalent amongst the young ones. There is, however, a fairly good show of Pheasants in the local coverts.

Valuable assistance in compiling this report has been rendered by Mr. V. G. F. Zimmermann, Mr. F. Vear, and Mr. E. Wilfred Taylor.

Arrival of Summer Visiting Birds, 1935

Sand-martin ...	Stamford Bridge, 9th April ; Tadcaster, 23rd April ; Newton-on-Ouse, 28th April ; Huntington, 27th April.
Swallow	Wigginton, 10th April ; York, 11th April ; Tadcaster, 20th April ; Pocklington, 22nd April ; Huntington, 27th April.
House-martin ...	Huntington, 22nd April.
Willow-warbler ...	Shipton, 14th April.
Chiff-chaff ...	Shipton, 14th April.
Cuckoo...	Tadcaster, 17th April ; Warthill, 20th April ; Skipwith, 21st April ; Pocklington, 22nd April ; Huntington, 25th April.
Wheatear	Strensall, 19th April.
Whinchat	Strensall, 19th April ; Askham Bogs, 30th March.
Whitethroat ...	Huntington, 20th April.
Yellow-wagtail ...	Huntington, 20th April.
Sandpiper	Newton-on-Ouse, 28th April ; Heworth, 5th and 15th May.
Landrail	Shipton, 29th April ; Naburn, 27th May ; Helperby, 5th June.
Spotted-flycatcher	Huntington, 2nd May.
Grasshopper-warbler	Buttercrambe, 4th May.
Swift	Huntington, 5th May ; York, 15th May ; Shipton, 18th May.
Sedge-warbler ...	Heworth, 5th May.
Garden-warbler ...	Huntington, 6th May.
Wood-warbler ...	Huntington, 6th May.
Turtle-dove ...	Huntington, 6th May ; Tadcaster, 17th May.
Nightjar	Strensall, 12th May.

WILD BIRDS AND EGGS PROTECTION COMMITTEE

List of Subscribers, 1935

	£	s.	d.		£	s.	d.
Ald. A. Hirst	5	0	0	Mr. W. G. Birch ...	0	10	0
Dr. J. L. Gayner ...	1	1	0	Mrs. Ewing	0	10	0
Mr. A. B. Ward ...	1	1	0	Mr. W. Waterhouse ...	0	10	0
Mr. H. B. Booth ...	1	1	0	Mr. F. Paget	0	10	0
Mr. T. Waddington ...	1	1	0	Mr. N. R. Newsholme	0	10	0
Mr. W. Macmillan ...	1	1	0	Mrs. C. Laycock ...	0	5	0
Mr. J. Atkinson ...	1	1	0	Scarborough F.N.			
Mr. L. Brigg	1	0	0	Society	0	5	0
Sir H. Smith	1	0	0	Mr. W. Greaves ...	0	5	0
Mrs. E. B. Gallimore...	1	0	0	Mr. T. N. Roberts ...	0	5	0
Mr. F. H. Edmondson	1	0	0	Mr. R. Butterfield ...	0	5	0
Mr. G. W. Wrangham	1	0	0	Mr. T. Sheppard ...	0	5	0
Mr. R. H. Edmondson	1	0	0	Mr. A. Mason	0	5	0
Mr. G. Machin (York				Mr. J. H. Rowntree ...	0	5	0
F.N. Society) ...	1	0	0	Mr. W. E. L. Wattam	0	5	0
Miss C. Edmondson ...	1	0	0	Nurse K. Sprague ...	0	5	0
Major J. W. Dent ...	1	0	0	Mrs. A. Stell	0	5	0
Mrs. J. S. Binns ...	1	0	0	Mrs. E. Cox	0	5	0
Mr. J. J. Brigg ...	0	17	6	Mr. W. F. Fearnley ...	0	5	0
Mr. E. B. Gibson ...	0	10	6	Mr. T. Stainforth ...	0	5	0
Mr. H. J. Behrens ...	0	10	6	Mr. P. H. Toy ...	0	3	0
Mr. R. Chislett ...	0	10	6	Mrs. Wood	0	2	6
Mr. S. D. P. Fisher ...	0	10	6	Rev. W. L. Schroeder	0	2	6
Mr. C. F. Procter ...	0	10	6	Miss A. Cherry ...	0	2	6
Mr. C. W. Mason ...	0	10	6	Mr. O. Darneley ...	0	2	6
Mr. W. J. Forrest ...	0	10	0	Mr. R. Coggrave ...	0	2	6
Miss Montague... ...	0	10	0	Miss E. Musgrave ...	0	2	6
Mr. T. Petch	0	10	0	Mr. J. A. Haigh ...	0	2	6
Mr. E. W. Taylor ...	0	10	0	Mr. A. Wood	0	2	6
Mr. W. J. Clark ...	0	10	0	Mrs. E. Morehouse ...	0	2	6
Mr. J. F. Marshall ...	0	10	0	Mr. A. E. Greaves ...	0	2	6
Mr. D. J. P. Heaton ...	0	10	0	Mr. P. W. Allday ...	0	2	6
Mr. A. Jordan ...	0	10	0	Mr. E. Hallowell ...	0	2	0
Miss K. P. Yeoman ...	0	10	0	Mr. T. H. Dick ...	0	1	0
Mr. W. Bennett ...	0	10	0	Miss P. P. Hill ...	0	1	0
Mr. V. G. F. Zimmerman	0	10	0				
Capt. S. E. Evans ...	0	10	0		£39	11	0
Mr. S. H. Smith ...	0	10	0				

Provisional Balance Sheet

Income.	£	s.	d.	Expenses.	£	s.	d.
Brought forward from last balance sheet	24	5	8	Watchers	24	11	6
Subscriptions as per list	39	11	0	Printing and stationery	2	9	9
				Postages	1	17	2
					28	18	5
				Balance in hand ...	34	18	3
	£63	16	8		£63	16	8

East Riding Area under Protection and Observation (C. F. Procter) : Speaking generally, the year has undoubtedly been a good one. There are certain significant factors which can be only interpreted by an explanation which embraces a better tolerance and kindlier attitude all round to bird life in general. There is also implied a better understanding of the relations between the predatory birds and others, to the extent that whilst protection is doing its best up and down the whole of Great Britain to improve the distribution of varieties and numbers of birds, there is an intelligent interception by man of the tendency of the raptors and other destructive birds to take advantage of this plenty.

The satellite villages and towns which are springing up round our metropolitan centres are all built on a more or less ambitious garden plan. The improved attitude and increased facilities and amenities for the birds is being very definitely reflected, and we nowadays have Owls, Chaffinches, Tits, Wagtails, in addition to dozens of the commoner Finches coming into closer contact with the aggregations of people. This is all very delightful and encouraging. Even Hawks are now often seen in places where, a few years ago, Sparrows and Starlings formed the normal bird population.

No single influence can make the claim ' alone I did it ' for this condition of affairs, but the Wild Birds and Eggs Protection Committee of the Yorkshire Naturalists' Union can fairly claim to have been among the foremost in helping to bring about this highly gratifying result.

At Spurn, changes in the terrain at the Beacon have had the result of impelling the birds to make their nests on the mud inside the bank, where the brackish waters blown over the bank in winter time have denuded the grass land and left flooded patches, which as June came round dried up. This is a very odd feature of the adaptability of the Terns and Ring Plovers, for both have accommodated themselves to these conditions, when without any protection whatever such as was afforded by the pebbly beaches, they laid up and brought off their complement of young.

A single pair of Oyster-catchers nested, first at the Humber side, where I found a nest obliterated by the stamp of a bullock's foot, but the same pair apparently afterwards were successful at the Beacon side, where a clutch was duly reared. We were unable to say that any more Oyster-catchers were successful, or even nested at Spurn, although there was an odd pair about all the summer.

On the east side, further along the peninsula, the usual nesting ground was almost abandoned and a fresh site used right at Spurn Point itself. This was a quite new position to be used as a main site, but in places the Terns were very close together, and I think that it is the best season we have had for many years, as the nests were set well above spring tide mark, and the birds seemed to have a good time.

The first nests were noted on 1st June, and new nests were recorded up to the middle of July. Altogether there were 42 Lesser Tern nests at Spurn, containing 104 eggs, and 10 Ring Plover containing a uniform clutch of four each. At Kilnsea there were 45 nests carrying a total of 107, and 14 Ring Plovers with a total of 54 eggs, two nests alone having three each. At Kilnsea there was one Oyster-catcher with three eggs.

Hornsea Mere was equally encouraging. The first Swallows were reported on 10th April, the Cuckoo on the 19th. Twenty-nine Herons nested and seemed to have a good time. At one time during the spring as many as 65 Swans were counted. Two pairs of Swans brought off six cygnets each. The Great-crested Grebes were patchy. Sixteen pairs nested apparently, but only six pairs were seen with young, two fours, two threes, two ones. In addition to this there were five unpaired Grebes, making 37 adults in all. The Ducks were late in starting, as it was cold at the beginning of the year, but there was a good show of Mallard and Pochard, as well as a sprinkling of Goldeneye and Tufted. There was a lot of Snipe. Two pairs of Kingfishers at the bridge near the lodge both got off, in addition to another pair at the boat house, and there was much show of small birds all round, especially Goldfinches, of which 12 nests were located. A Swallow's nest held four young in the middle of September. These were very late, and it is doubtful whether they would get away.

I am very pleased indeed to have to record that a pair of Stone Curlew reappeared in North Yorkshire and successfully reared a pair of young. I went over and was shown these and was delighted to see them back and lucky. Yet a second pair were recorded in a new situation, but it is not definitely known whether they nested or not, although it is very probable. When I saw the young of the first pair they were well on the wing and out of all normal danger.

(*To be continued.*) *The Naturalist*

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. Eagle Clarke, F.R.S.E., and F. Boyes.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. Fortune, F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

London : A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C. 4.
And at Hull.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. Blair, B.Sc., F.R.E.S. — R. W. Lloyd, F.R.E.S.
H. G. Champion, M.A., F.R.E.S. — F. Laing, M.A., B.Sc., F.R.E.S.
J. E. Collin, F.R.E.S. — H. Scott, M.A., Sc.D., F.L.S.
J. J. Walker, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

NATHANIEL LLOYD & CO., LTD., BURRELL STREET, LONDON, S.E.1.

BRITISH BIRDS

AN ILLUSTRATED MONTHLY MAGAZINE

Edited by H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., H.F.A.O.U. ;
Assisted by Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., F.Z.S., and N. F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

A complete current History of British Birds

ARTICLES **NOTES**
CORRESPONDENCE **REVIEWS**

Beautifully illustrated with Photographic and other Plates

ANNUAL SUBSCRIPTION, 20/- POST FREE; MONTHLY, 1/9 NET.
Specimen Plates with List of Contents post free.

London: H. F. & G. WITHERBY, 326, High Holborn

NORTH WESTERN NATURALIST

A Scientific and Educational Journal (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

Edited by A. A. DALLMAN, F.C.S., in collaboration with

H. Britten, F.E.S. — C. L. Walton, M.Sc., PH.D.,
W. E. Collinge, D.Sc., F.S.A. — Rev. G. H. Carpenter, D.Sc.
J. W. Jackson, M.Sc., F.G.S. — H. E. Forrest, F.L.S.
R. H. Corstorphine, B.Sc. — F. E. Weiss, D.Sc., F.R.S.
A. Wilson, F.L.S., F.R.MET.S. — T. A. Jones.

Communications to :—
Editorial.—A. A. Dallman, F.C.S., 12 Tickhill Road, Doncaster.
Business.—T. Buncle & Co., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

COLLECTING APPARATUS.

Nets.	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

WINESTEAD AND ITS LORDS

The History of a Holderness Village. By NORMAN JAMES MILLER. M.A., Rector of Winestead, 1890-1920. With a Foreword by THE ARCHBISHOP OF YORK. 258 pages, demy 8vo, 9 plates and 5 illustrations, quarter-bound cloth. 10/- net, or post-free, 10/6.

"Parish history is a notable aid to the cultivation of a keen national spirit. An excellent example is 'Winestead and its Lords,' by the late Canon N. J. Miller. The old church there is a shrine of English history, and the Rector holds his Rectory with house and glebe in unbroken succession from the appointment of Nicholas Maleth in 1237. Every phase of the making of England is illustrated in this chronicle of a quiet corner in 'the mersshy contree called Holdernesse,' as Chaucer describes it. Winestead was the birthplace of Andrew Marvell, and in his poems he recalls the lowly parsonage in which he was born."—*Morning Post.*

Obtainable from all booksellers

A. BROWN & SONS, LIMITED, 5 Farringdon Avenue, London, E.C.4.
AND AT HULL.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

PERCY H. GRIMSHAW, F.R.S.E., F.E.S.
Keeper, Natural History Department, Royal Scottish Museum

AND

JAMES RITCHIE, M.A., D.Sc., F.R.S.E.
Regius Professor of Natural History, University of Aberdeen

Assisted by:—EVELYN V. BAXTER F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; W. EAGLE CLARKE, I.S.O., LL.D.; ANDERSON FERGUSSON, F.E.S.; A. C. STEPHEN, B.SC., F.R.S.E.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

Printed by A. BROWN & SONS, Ltd., Perth Street West, Hull, and published by A. BROWN & SONS, Ltd., at 5 Farringdon Avenue, in the City of London.
January, 1936.

B., 1936

No. 949
No. 722 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

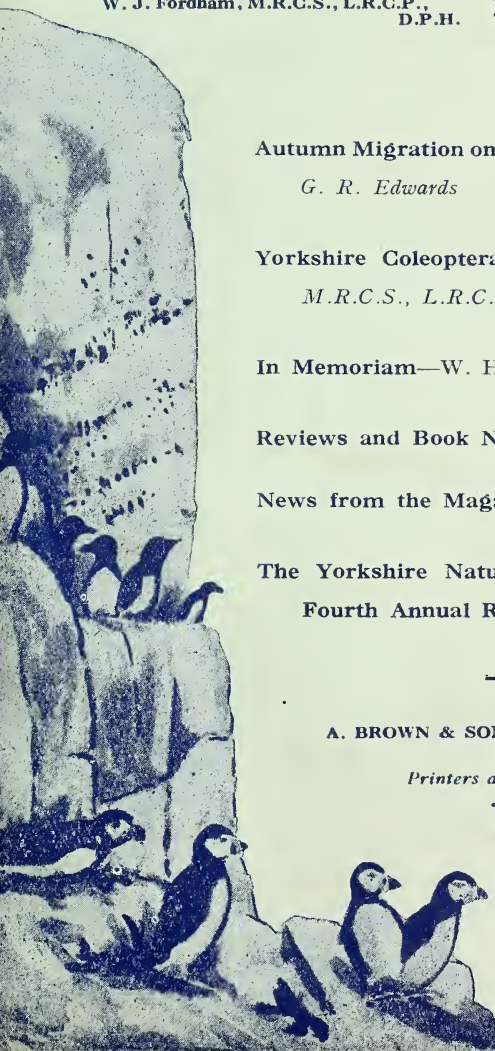
PRINCIPALLY FOR THE NORTH OF ENGLAND

SMITHSONIAN INSTITUTION
FEB 19 1936
NATIONAL MUSEUM

Edited by
W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S. M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
F. A. Mason, F.R.M.S.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

PAGE

Autumn Migration on the Yorkshire Reservoirs—
G. R. Edwards 25-30

Yorkshire Coleoptera in 1935—*W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.* . . . 31-33

In Memoriam—W. H. Crofts—*T.S.* 34

Reviews and Book Notices 35

News from the Magazines 33, 34, 35

The Yorkshire Naturalists' Union's Seventy-Fourth Annual Report for 1935 (*Continued*) 36-48

LONDON :
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

YORKSHIRE NATURALISTS' UNION

VERTEBRATE SECTION

President of the Section : ALBERT HIRST, J.P.

TWO MEETINGS will be held in the Library of the Church Institute, Albion Street, Leeds, on Saturday, February 15th, 1936, at 3-15 p.m. and 6-30 p.m.

The following papers will be read :—

'Exotic Fish for the Home,' by A. Snow (illustrated by live specimens).

'Pembrokeshire and its Islands,' a sketch of the Vertebrate Fauna with special reference to some birds, by Captain H. M. Salmon, M.C., M.B.O.U. (illustrated by lantern slides).

Members and Associates are cordially invited to attend and to bring notes, specimens, and lantern slides. Will Officers of Affiliated Societies kindly notify their members?

13 Chestnut Avenue,
York.

E. WILFRED TAYLOR,
Hon. Secretary.

AUTUMN MIGRATION ON THE YORKSHIRE RESERVOIRS

G. R. EDWARDS

THE Autumn migration as observed on the moorland reservoirs bordering the West Riding of Yorkshire has of late years been eagerly awaited by Halifax naturalists.

Some years immediately before the war, much good work was done in this direction by Hebden Bridge naturalists, but hostilities put a stop to their efforts. It was appropriate then, with a new generation growing up, and with improved transport facilities that the present Chairman of our Halifax society, Mr. W. Greaves, should put forward (in 1933) the suggestion that this important branch of field observation should be recommenced on the same lines as in pre-war days. The early efforts of the Hebden Bridge naturalists were all the more commendable when it is realised that they had to walk the whole distance to and from the high ground on which the three reservoirs are placed.

Nowadays with buses and cars at hand, the journey is a matter of half an hour, and three reservoirs within a twenty-five mile circuit can be visited each week-end. It is not surprising that such facilities should result in increased observation of our rarer passage migrants.

The first visit in what has now become an annual event was made by Mr. V. S. Crapnell and myself to Withens and White Holme reservoirs on Blackstone Edge Moors, on September 17th, 1933.

A clear blue sky, and the crisp Yorkshire air made walking a pleasure as we crossed the high ridge above Withens. A female Merlin sped low over the peat bogs, causing consternation to the Pipits ; then as we approached White Holme the cry of Redshank and Curlew broke the stillness of the late afternoon. Long days of drought had reduced the reservoir to a quarter of its normal size, and vast stretches of mud, resembling a river estuary in extent, shimmered in the September sunshine.

A party of Dunlin, silvery white and brown, flashed by, twisting and turning, to alight with dramatic suddenness on a narrow point of land. We approached cautiously, our boots sinking deeply at every step. The waders were apparently unconcerned.

A few Teal and a solitary Tufted Duck away out in the centre of the water, winged rapidly to our right, and an ever-alert Redshank piped a warning to the entire assembly. Several dead Blackheaded-gulls were noticed lying rotting on the mud, but none were ringed birds so we passed on, until a smaller carcase aroused our interest. Only the bill

FEB 17 1936

and tail were in good condition, and we obtained the latter, subsequently having it identified by the British Museum as belonging to a Turnstone.

The group of waders was running nimbly along the water's edge stooping with a sureness of aim to obtain some water creature, and we identified several Dunlin still in breeding plumage, but our interest became centred upon three silvery Sanderling a short distance away from the commoner waders. They were in beautiful plumage, one bird showing the faintest trace of russet on the breast.

This visit stirred us to further effort, and on October 8th a Dotterel appeared. Getting near to him on a spot which afforded not the slightest cover was a problem, but the sport was fascinating ; not the least exciting part being the crossing of the mud and wondering how much of your companion would show above the surface after the next step. The Dotterel called, a pleasant cry delivered in appropriate surroundings, a clear " Tee-oo-ee " that echoed faintly in the hills ; a cry which fills one with a feeling of satisfaction when hearing it for the first time on the high tops of the Grampians.

It was not until October 22nd that the high spot of the year was reached. We had climbed the rocky cart track to Withens, facing a raging gale the whole of the way. Great masses of grey cloud whipped along the ridge of hills, leaving stray wisps to linger in the cloughs and sheltered corners. Winter seemed well on the way and we had little faith in seeing anything unusual unless the storm had driven some tired migrants from their course. Just as we reached the crest of the hill and the wind met us with all its fury, a small bird of erratic flight sped by at a considerable height. Up went the glasses. It was a Swallow ! Our previous latest date for the district was October 10th.

At the reservoir we rested, for it was utterly impossible to hold the glasses steady in the high wind. Far across the water C. noticed something move, and we were able to get within easy range before leaving cover. It was a Turnstone and the tortoiseshell back looked remarkably conditioned for one on migration.

When the wind abated, we went over to White Holme and saw a male Ring Ouzel. Two summer migrants on October 22nd !

Wigeon appeared on the 29th, a day of driving snow and hail, and it made us shudder to observe them diving, usually for periods varying from six to nine seconds.

Little else was seen during the rest of the year, the moorlands being shrouded in heavy mists, but we saw the Goldfinch and Bullfinch, in November, both in the same tree (on different dates).

The following year, 1934, again acting on the advice of Mr. Greaves we began our reservoir rambles during early July, but met with little success until the 29th, when a medium-sized bird of dark red plumage attracted our attention, on White Holme. He was on a rocky island some distance from the shore and was accompanied by four Ringed Plover, but our arrival coincided with his departure and we were only able to record 'probable Knot.'

However, the disappointment was covered by a close view of three Sanderling and six Dunlin, a few minutes later. Ringed Plover occurred on all three reservoirs and the sewage farms throughout the season, in parties varying from two to eight birds.

One Saturday, August 11th, I went on to the sewage beds intending to spend a quiet hour by the river watching the Kingfisher, but a Green Sandpiper rising from the side of a settling bed put all thoughts of rest out of the question.

The white rump contrasting with the dark back and wings was an easy identification. It was like a huge House Martin flying by, but although I had the bird in view for a considerable period it did not alight. Half an hour later I walked casually round an old barn and on the nearest bed were two Ruffs feeding. They stayed only fifteen minutes before continuing the migration, but I was given an excellent view from twenty feet. This was the first record for Halifax Parish.

The following day we naturally made for the sewage farm before going on to the moors, and to the delight of Mr. Greaves and myself the Green Sandpiper had returned. This time by making use of the ample cover provided we could watch him at his feeding, and noted the unusual length of leg. With him were four Snipe and the party made a splendid picture. The same evening Mr. Crapnell was also successful in observing the bird in flight.

Also on this date while going the usual round of White Holme we put up a very tiny wader from the shore but failed to observe where he had landed, and he again rose before we could spot him. This time he flew right away into the blue and was gone. His size and the peculiar trilling call as he flew reminded us of a Stint. (The Little Stint was recorded for the Parish some years ago.)

Turnstones appeared for the first time on August 19th, with Dunlin and Ringed Plover, and a second Green Sandpiper was on the sewage beds two days later.

Waders were entirely absent from White Holme on the 26th, but a mixed party of ten Wigeon and Shoveller was acceptable as substitute.

The third Ruff to be seen, arrived on Fly Flatts reservoir

on September 1st, giving us much trouble in establishing identity, for it had a prominently curved bill, whereas the first two and all illustrations showed it straight. Subsequent observation proved that both types do occur.

The following day I went alone to White Holme but I saw little. At lunch time I watched a party of what appeared to be Dunlin some distance away on an island, feeding slowly. I took little notice until one of the birds flew and I saw he had a white rump. By the time I had reached the far shore, the rest of the birds had joined the first. They were remarkably tame and I had no difficulty in saying they were Curlew Sandpipers with certainty ; still I wished that someone had been present to share my pleasure and witness the occurrence. Not far away fed a single Turnstone.

The morning after, I called on Mr. Crapnell, all excitement and was met be an equally excited companion. He had been to White Holme and had seen six Curlew Sandpipers and 3 Turnstones ! Comparing times we discovered that we had missed each other by a margin of fifteen minutes.

The same reservoir provided three Ruffs on September 9th, and a report that the Greenshank was suspected. We confirmed this the following week when two splendid birds were seen.

On September 16th, accompanied by Messrs. Bennett and Gilpin from Leeds, White Holme obliged by harbouring two Greenshanks and a Dotterel. Withens provided Ringed Plover.

As the season wore on we knew that some time the amazing run of luck must end and we went out expecting the inevitable blank day. The last day of that month a party of local naturalists accompanied us to White Holme and at once a wader appeared. It was a Grey Plover. Later a party of four arrived and fed along with Dunlin, so that on one afternoon this one spot held Green, Golden, Grey and Ringed Plovers. The last record of the Grey bird was as far back as 1865.

Approaching the end of the season, October 8th, a cheerless day of fog and light rain, I had a Ruff on White Holme, the seventh to be seen since the first appearance three months ago.

The present year (1935) presented a different aspect to the recorders (V. S. Crapnell, F. Murgatroyd and myself) on the reservoirs. Many months of heavy rain told their tale upon the narrow strips of water and we were confronted by vast areas of ' sea,' whipped to fury by high winds. The feeding grounds were covered, only a strip a yard wide remaining, and this was poor inducement for tired migrants.

A Wood Sandpiper on the sewage farm on May 25th was the first spring migrant of note which we had seen, but despite an early start we recorded nothing on the return migration until August 4th, when two immature Ringed Plover were seen at White Holme. The following week was remarkable

only for the tameness of a Dunlin that walked straight past three of our party only five feet away, and when followed ran along the shore about three feet away. The same day we crossed over the hill to Blackstone Edge reservoir, putting up a fine male Goldeneye along with considerable numbers of Teal. (About this time V. S. C. saw fourteen Turnstones on Blackstone Edge.)

The long-awaited Greenshank, one of our favourite migrants, came on August 24th, when White Holme provided three, besides a good view of five Common Scoter Duck, and the following day brought the amazingly confiding Reeve, which allowed itself to be filmed at a distance of nine feet, without hide tent, on the borders of Fly Flatts reservoir. The mud was astonishingly treacherous and the contortions of Mr. Crapnell and myself would have made a better film than the results obtained of the Reeve.

The fourth Greenshank, followed by another of this species later in the afternoon, was recorded for White Holme, on September 1st, while Fly Flatts produced four Ringed Plover and over fifty Mallard.

The charm of reservoir recording lies in the knowledge that one is never certain what seemingly impossible species will turn up next. Half an hour can change the entire migrant population of the reservoir. On September 15th the day was wet and a high wind almost caused us to abandon the attempt to reach White Holme. I was accompanied by Mr. Murgatroyd only, Mr. Crapnell having gone direct, while we visited Withens reservoir on the way. On that water we saw forty-five Teal flying through heavy rain, but a bright period gave us the chance of reaching White Holme. We found the scene one of desolation, and the rising gale accompanied by driving rain did not improve the situation. For a time we sheltered beneath a bank of wet peat, being cheered by a Greenshank that almost alighted before us then changed his mind, to fly off shouting, 'Chook-a, Chook-a, Chook-a.' Continuing, we saw Mr. Crapnell approaching and hoped he too had seen the Greenshank, as there seemed to be nothing else of interest, but he was able to report splendid views of Sanderling, Grey Plover and a Knot. Considerably revived in enthusiasm, we circled the reservoir but all three species had gone. On the far side was a tiny piece of sand, our only hope. There were two waders on this spot, and the embankment afforded ideal shelter for ourselves. The birds were Curlew Sandpipers! Out on the water many hundreds of feet away Mr. Crapnell pointed out two flying birds which, greatly to his credit he had separated from the many Gulls. The light was bad in the extreme, but when I put up the glasses I said, 'Terns,' then became more doubtful for the

back was far too dark for any of our breeding Terns. Their habit of flying into wind, dipping but not diving, then turning and covering the same beat, repeatedly, was a very characteristic movement. Consultation and the reference given in the ever faithful ' Cowards ' books made us record with certainty the Black Tern. Thorburn's picture of a Black Tern flying shows exactly the stage at which our birds were observed. So the dull wet day ended, and we returned contented.

One Black Tern was present on the following Saturday, but failed to put in an appearance when our party was honoured by the company of Messrs. Grist and S. Smith, of Leeds, the next day. However, three Common (Arctic?) Terns were seen and a splendid view of yet another Curlew Sandpiper obtained, while Fly Flatts gave a wealth of species including Golden and Ringed Plovers, Goldeneye Drake, nine Mallard and five Pochard.

The same spot was also favoured on September 29th, when we put up two Greenshank, and observed one Ringed Plover and six Pochard, completing the day with our first view of a Jack Snipe.

It seems strange that the common birds are least observed on the moorland reservoirs over 1,000 feet above the sea. It was an event, therefore when, on October 6th, a party of eight Blue Tits crossed the water, heading for Lancashire. This same day we had two fine Stonechats, non-breeders in our area, on the embankment, while on the water at White Holme swam a Grebe. It was far out and we were not in agreement as to its identity. From its black and white appearance, the erect neck and unusually high swimming position, Mr. Murgatroyd and I believed it to be the Sclavonian, but Mr. Crapnell, regarded it as a Great Crested Grebe. This is what we proved it to be after we had visited the museum several times.

The last of our hopes for seeing further waders was dashed, when on October 13th, Fly Flatts was found to be overflowing, and as this was the last reservoir to show any shore, the feeding grounds were now covered. A cock Reed-bunting and a few Duck enlivened the last of the 1935 rambles.

In conclusion I would like to mention a point which we have often discussed. Our observations have been made at week-ends only. What vast numbers, and what variety of species must pause to feed at our moorland reservoirs during the rest of the week. What a wealth of information could be gathered by systematic observation if it covered all the daylight hours throughout the migration. We extend a welcome to Y.N.U. members to share our pleasure in future seasons, only be sure to bring waterproof boots, good binoculars, plenty of food, and enthusiasm.

YORKSHIRE COLEOPTERA IN 1935

Report of the Coleoptera Committee of the Yorkshire Naturalists Union

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

BEETLES have not been numerous during the past year, but a large number of new species have been added to the Yorkshire list, twenty-three in all. Several notes have appeared in *The Naturalist*, which should be consulted also for an account of the beetles taken at the meetings of the Yorkshire Naturalists' Union.

In the following list an asterisk denotes a new Vice-county record, and the names of the recorders are as follows :—

M.D.B.	M. D. Barnes, Huddersfield.
E.G.B.	E. G. Bayford, Barnsley.
H.B.	H. Britten, Whitby.
J.M.B.	J. M. Brown, Sheffield.
J.R.D.	J. R. Dibb, Leeds.
W.J.F.	W. J. Fordham, Barmby Moor.
W.D.H.	W. D. Hincks, Leeds.
T.S.	T. Stainforth, Hull.
G.B.W.	G. B. Walsh, Scarborough.
J.W.	J. Wood, Keighley.

Cicindela campestris L. ab *funebris* St. (Very rare.) Goathland (H.B.) ; only recorded from Horsforth. *V.C. 62.

Carabus nitens L. (Local on heather moors.) Strensall Common, May (T.S.).

C. arvensis Hbst. (Very local.) Strensall Common, May (T.S.).

Blethisa multipunctata L. (Very local.) Common under stones in its well-known locality, Ryhill Reservoir, in June (M.D.B.).

Rhantus suturellus Heer. (Local and rare.) Allerthorpe Common (W.J.F.)

Aleochara diversa Sahl. (New to Yorks.) Raithwaite and Mulgrave Woods (H.B.). A widely distributed species to the south of Scotland.

Oxypoda induta Rey. (New to Yorks.) Skelder (H.B.), a rare species reaching the South of Scotland.

O. sericea Heer. (New to Yorks.) Whitby and Skelder (H.B.). A local species distinct from *nigrina* Wat., with which it has been confused. *Nigrina* has occurred at Saltburn.

O. formiceticola Mark. (Rare.) Farndale, with *Formica rufa* (G.B.W.).

O. hæmorrhoa Mann. (Rare.) Farndale, with *Formica rufa* (G.B.W.)

Thiasophila angulata Er. (Very local and rare.) With *Formica rufa*, Farndale (G.B.W.)

Phloeopora testacea Mn. (Rare.) Allerthorpe Common. Under pine bark (W.J.F.).

Dinarda maerkeli Kw. (Local and rare.) Farndale, with *Formica rufa* (G.B.W.) ; only recorded from Scarborough.

Notothecta flavipes Gr. (Very local.) With *Formica rufa*. Farndale (G.B.W.).

Atheta islandica Kr. (Local and rare.) Skipwith Common (W.J.F.).

A. nitidicollis Fair. (New to Yorks.) Goathland (H.B.). A widely distributed species.

A. inoptata Shp. (Rare.) Skipwith and Allerthorpe Commons (W.J.F.).

A. xanthopus Th. (New to Yorks.). Glaisdale (H.B.). Widely distributed as far as South Scotland.

A. pertyi Heer. (Rare.) Fylinghall, in fungi (W.J.F.).

A. fungi Gr. var. *dubia* Shp. (New to Yorks.) Sandsend and Skelder (H.B.). This variety merits specific rank.

A. clientula Er. (New to Yorks.) Mulgrave Woods (H.B.). A widely distributed species.

A. talpa Heer. (Local and rare.) Farndale, with *Formica rufa* (G.B.W.).

Bryocharis cingulata Mann. (Rare.) Holmehouse Wood (J.W.).

Staphylinus stercorarius Ol. (Local and widely distributed.) Hovingham, August (J.W.).

S. winkleri Be. (New to Yorks.) Mulgrave Woods, November (H.B.). Recently added to the British list from as far north as Harpenden.

Philonthus rectangulus Shp. (New to Yorks.) Whitby (H.B.). Added to the British list in 1935. (See *The Naturalist*, 1935, p. 247.)

P. vernalis Gr. (New to Yorks.) Whitby (H.B.). A widely distributed species in moss and dead leaves.

Xantholinus atratus Heer. (New to Yorks.) Whitby (H.B.). A rather rare species occurring with ants as far north as Lancashire and Cheshire.

Leptacinus formicetorum Mk. (Local and rare.) Farndale, with *Fromica rufa* (G.B.W.).

Bledius subterraneus Gr. (Rare.) Crathorne (W.J.F.).

Syntomium æneum Mull. (Local.) Holmehouse Wood, Keighley, October (W.D.H.).

Phloeonomus planus Pk. (New to Yorks.) Hovingham (J.M.B.). A local but widely distributed species at sap.

Catops fuliginosus Er. (New to Yorks.) Mulgrave Woods (H.B.). Rare but widely distributed to the north of Scotland in moles' nests, rabbit burrows, etc.

Aclypea opaca L. (Very local.) Allerthorpe Common, on broom, Skipwith Common, and Bubwith (W.J.F.).

Endomychus coccineus L. (Local.) Helmsley (J.M.B.); Allerthorpe Common, in Polyporus on birch (W.J.F.).

Dendrophilus punctatus Hbst. (New to Yorks.) With *Formica rufa*. Farndale (G.B.W.). Rare, recorded as far north as Northumberland; occurs with ants and in birds' nests.

D. pygmæus L. (New to Yorks.) Farndale, with *Formica rufa* (G.B.W.). Widely distributed with *Formica rufa* to the north of Scotland.

Monotoma conicicollis Ab. (Very local.) Farndale, with *Formica rufa* (G.B.W.).

M. angusticollis Gyll. (Very local.) Farndale, with *Formica rufa* (G.B.W.).

Corticarina similata Gyll. (New to Yorks.) Mulgrave Woods (H.B.). Widely distributed but local to North Scotland.

Mycetophagus atomarius F. (Very local.) Austwick (M.D.B.).

Prosternon holosericeus Ol. (Very local.) Shipley Glen (J.W.).

Platycis minuta F. (Rare.) Helmsley (J.M.B.).

Malthinus fasciatus Ol. (Rare.) Skipwith Common (W.J.F.).

Molorchus minor L. (Very rare.) Buttercrambe Woods (J.R.D.). *V.C. 62 only recorded from Escrick.

Pachytodes cerambyciformis Schr. (Very local.) Elland Park Wood, frequent on hogweed throughout July (M.D.B.); still occurs in its old locality at Wharncliffe (E.G.B.).

Tetrops præusta L. (Very local.) Buttercrambe Woods, June (J.R.D.). *V.C. 62.

Stenostola ferrea Schr. (Very rare.) Shipley Glen, May (J.W.).

Orsodacna cerasi L. (Very local.) Helmsley, May (M.D.B.). Fairly common on sloe in Forge Valley in May; previously on hogweed, the end of June (G.B.W.).

Chrysomela varians Schal. (Local.) Helmsley, bronze and green forms (J.M.B.).

Phyllobrotica 4-maculata L. (Very local.) Hovingham (J.M.B.).

Conopalpus testaceus Ol. var. *flavicollis* Gyll. (New to Yorks.) Birthwaite, one specimen (E.G.B.). A rare species taken as far north as Cumberland.

Metoechus paradoxus L. (Rare.) Kexbro' (G. H. Sutton) (E.G.B.). Crawling on tree trunk in Coxley Valley near Wakefield (M.D.B.) ; Hovingham (J.M.B.).

Apion assimile Kirb. (Very local.) Allerthorpe Common and Barmby Moor (W.J.F.)

A. hydrolapathi Kirb. (Very local.) Edlington Wood (W.J.F.). Bubwith and Barmby Moor (W.J.F.). *V.C. 61.

Barypithes araneiformis Schr. (Very local.) Keighley, June (J.W.).

Polydrosus pilosus Gredl. (New to Yorks.). Silpho Moor, Buttercrambe, Helmsley, Forge Valley, Staintondale, Cotherstone, Allerthorpe Common (G.B.W.). Recently added to the British list (*E.M.M.*, 1935, p. 37).

Phytonomus plantagimis D.G. (Local.) Hovingham (J.M.B.).

Orchestes pilosus F. (New to Yorks.) Robin Hood's Bay (H.B.). A rare species occurring as far north as South Scotland.

O. avellanæ Don. (Very local.) Hovingham (J.M.B.).

Anthonomus inversus Bed. (Rare.) Bingley Wood (J.W.). *V.C. 63.

A. rubi Hb. var. *comari* Crotch. (New to Yorks.) Robin Hood's Bay (H.B.), by sweeping *Potentilla palustris*. Worthy of specific rank. Very local to South Scotland.

Mesites tardyi Curt. (Very local.) Robin Hood's Bay (T.S.).

Caulotrypis æneopicea Boh. (New to Yorks). In timber in the Judge's House, York (A. Smith) (G.B.W.). A local species occurring in dead wood as far north as Birkdale, Lancs.

Eccoptogaster intricatus Ratz. (New to Yorks.). Whitby, November (H.B.) ; a rare species of southern distribution occurring as far north as Northumberland.

Hylastes cunicularius Er. (New to Yorks.) Buttercrambe Woods, June (W.D.H.). Widely distributed in Britain to the north of Scotland.

Platypus cylindrus F. (Very local and rare.) Hull, in a timber yard in imported oak (T.S.). *V.C.61.

NEWS FROM THE MAGAZINES

The Entomologist for January contains ' Migration Records, 1935,' by Captain T. Dannreuther (*Vanessa atalanta*, a specimen under observation from November to April in Flamborough Church. *Colias croceus* ranged from the Isle of Man and Ayr, and many were recorded in Scotland in September. *Macroglossa stellatarum*, one at Birtley, Durham, and another at Filey in September. *Aglais urticæ*, hundreds reported at Flamborough Head in March. *Nymphalis antiopa*, five seen in the Tyne district in August and September.) "Symmetry in the wing-pattern of some papilionid butterflies,' by B. N. Schwanswitsch ; ' A new Kashmir caddis fly (Trichoptera),' by M. E. Moseley ; and numerous notes and observations.

The Entomologist's Monthly Magazine for January contains ' A new genus and a new species of Elminæ (*Coleoptera Dryopidæ*),' by H. E. Hinton ; ' Notes on Wasps (V.),' by G. E. J. Nixon ; ' Miscellaneous Records of Parasitism,' by G. Salt (Syrphid parasites and parasites of *Cephus pygmaeus* Linnæus) ; ' A laboratory method for rearing Sciara and phorid flies,' by M. D. Austin and R. S. Pitcher ; ' Miscellaneous observations on the biology of *Apanteles glomeratus* L. (Braconidæ),' by A. G. Hamilton and several shorter notes, including ' Coleoptera in Dumfriesshire,' by J. Murray, and ' *Corixa dentipes* Thoms. in Nottinghamshire,' by J. W. Carr.

In Memoriam

W. H. CROFTS

We regret to record the death of William Hastings Crofts, at the age of 74, which took place on December 19th, 1935.

Mr. Crofts was perhaps best known for his work in connexion with the old firm of architects, Messrs. Botterill, Son and Bilson, of Hull, with whom he was connected for the greater part of his life. In this connexion he had much to do with the supervision of the erection of Hymers College, Hull, the Grammar School at Bridlington, and a large number of schools and churches in Hull and district.

A keen geologist, he was one of a small and enthusiastic band who founded the Hull Geological Society nearly half a century ago, and he was one of the few remaining original members. From the commencement he has taken a prominent part in its indoor meetings and field excursions, and at one time or another has acted in the capacity of member of the Council, Secretary, Treasurer, and President.

His work brought him into touch with important geological societies throughout the kingdom, and he had a wonderful ability for making personal friends with many of the more prominent geologists in the British Islands. A keen observer, he watched the various excavations taking place in Hull and district, and was responsible for a large number of important memoirs, but his outstanding work is that in connexion with the excavations made for the docks in Hull. Here his knowledge of the various deposits occurring on the boulder clay enabled him to correlate the beds of peat, estuarine shells, silts, etc., and his work was published by important scientific societies. In a list of memoirs dealing with Yorkshire Geology, published a few years ago, Mr. Crofts was responsible for twelve entries.

Quite apart from his work as an architect and geologist, Mr. Crofts will long be remembered by a large number of friends for his kind thoughts and help. He seemed to spend much time in endeavouring to help people who needed it, and unquestionably it can be said that the people among whom he moved are certainly much the better for his life among them.

T.S.

The Irish Naturalists' Journal for January, 1936, has articles on ' Recent Finds of Flint Arrow-heads,' by E. E. Evans ; ' Bird Life on North Bull ' (continued), by Rev. P. G. Kennedy ; ' The Occurrence of the Snipe-Eel on the Irish Atlantic Slope,' by A. Fraser-Brunner ; ' The Movements of Young Nightjars,' by C. B. Moffat ; and ' *Hydrilla verticillata* Presl., a Plant new to Ireland,' by W. H. Pearsall.

REVIEWS AND BOOK NOTICES

Garden Science by **John Grainger**, pp. 265, 110 text figures. (University of London Press), 4/6 net. This little book is designed to convey to amateurs, horticultural students and those interested in school gardens, the elementary scientific principles involved in garden maintenance and improvement. It first considers the general properties of plants and their vital processes, particularly in relation to the air and the soil. Then follow chapters dealing with vegetative propagation and grafting, flowers and the problems of heredity. Finally fungus, virus and insect pests of plants are dealt with. This is certain likely to be a useful textbook for those interested in instruction for school or other gardening purposes.

A Vertebrate Fauna of Forth, by **L. J. Rintoul** and **E. V. Baxter**, pp. lvi+398, with 16 full-page plates and map. (Oliver & Boyd), 25/-. This volume is a noteworthy addition to the fine series dealing with the Faunal Areas of Scotland commenced by the late Dr. Harvie Brown. The survey will be completed when volumes relating to Clyde and Solway are published. The work under review has been in the hands of very well-qualified naturalists. Miss Rintoul and Miss Baxter are ornithologists of the first rank, and they have had access to the extensive records of many Scottish naturalists. The result is most gratifying, and this book may be regarded as a model for those who wish to compile local faunas. Those familiar with Dr. Harvie Brown's work will realise that the area dealt with is one with natural boundaries ; it is that part of Scotland drained by the River Forth and its tributaries. It is very varied in character and one is therefore not surprised to find that the authors deal with 64 species of mammals (13 extinct), 299 birds, 11 reptiles and amphibians, and 143 species of fish. Of the 400 pages of the book 300 are devoted to birds, which is reasonable under all the circumstances. Chapters on the area from a faunal standpoint, effects of environment of animal life, and on bird migration form a useful introduction ; there is a very complete bibliography, and an excellent map—coloured orographically and mounted on linen. Nomenclature is up to date, and while there is no useless padding, the detailed histories and distribution of species is given with much fullness. The illustrations are appropriate and well reproduced.

NEW HANDBOOKS OF BRITISH REGIONAL GEOLOGY.

(1) **Northern England**, by **T. Eastwood**, pp. vi+76, with 26 figures in the text and 8 plates. (2) **Scotland—The Tertiary Volcanic Districts**, by **J. E. Richey**, pp. viii+116, with 57 figures in the text and 9 plates. (3) **The Grampian Highlands**, by **H. H. Read**, pp. vi+82, with 25 figures in the text and 10 plates. (4) **The South of Scotland**, by **J. Pringle**, pp. iv+98, with 14 figures in the text and 7 plates. (5) **The Welsh Borderland**, by **R. W. Pocock** and **T. H. Whitehead**, pp. vi+84, with 39 figures in the text and 11 plates. The five memoirs mentioned above are published under the auspices of the Department of Scientific and Industrial Research. The price of each is 1/6, and copies may be obtained from His Majesty's Stationery Office or through any bookseller. We are very pleased to have the opportunity of recommending these additions to the fine series dealing with British Regional Geology, the publication of which commenced last year. They are clearly written, profusely illustrated, and there are copious references to appropriate literature. They are ideal memoirs for the general naturalist.

The Natural History Magazine (British Museum), Vol. V, No. 37, January, 1936, price 1/-, contains a long well-illustrated article on British Bats, Part II of an account of the British Museum Expedition to East Africa, and a very good account of the International Exhibition of Nature Photography.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-FOURTH ANNUAL REPORT FOR 1935

(*Continued from page* 24)

MAMMALS, AMPHIBIANS, REPTILES AND FISHES COMMITTEE

Mammals (W. G. Bramley) : Reports from the various observers indicate that most of the mammals have had a more or less successful season. Hares and Rabbits have increased and the latter have become a serious nuisance in many districts following two favourable summers with an open winter intervening, breeding having been nearly continuous for over eighteen months. On 19th July, 1935, an Albino Rabbit was shot at Garton.

Foxes are also in plenty and troublesome to poultry-keepers. Otters, especially in the York area, are numerous, and many complaints are made by anglers about their destruction of fish. One of 3 ft. 9 in. was killed at Huntington on 7th October, it had killed and was eating an Aylesbury Duck. From Mr. S. H. Smith's pond in his garden at York, Otters have destroyed many ducks, including Wigeon, Mallard, and Black East Indian Duck.

Both in Yorkshire and the adjoining counties reports shew a large increase in the numbers of Stoats, but this does not apply to the Weasel which occurs only in its normal numbers.

About York the Water Vole occurs in lesser numbers, but in North Yorkshire they are more abundant and have again made their appearance at Scarborough Mere. In certain parts of the Scarborough district there is also an indication of the increase of the Water Shrew.

The Red Squirrel shows no signs of increasing, and I have only three records—two from Scarborough and one from Buttercrambe. The Grey Squirrels, however, still hold their own in spite of persecution, and are gradually extending their range. Two which built a nest in a tree on the edge of a footpath in Stepney Road, Scarborough, a populous district, met with violent ends, one being shot and the other worried by a dog.

Thirty-five Black Rats have been obtained about the piers and ships at Scarborough up to 30th September, while only eleven of the Brown Rat were taken in the same area.

A farmer at Denton reported to Mr. H. B. Booth that he had seen a male Brown Rat kill a full-grown Rabbit, a most unusual occurrence.

Last year Mr. A. Gordon, head keeper at Duncombe Park, imported two pair of Pine Martens from Ireland and reared a litter. Two of the old ones, a male and female, have since died, and early this summer the other male escaped and has not been recaptured or heard of since, and this note may be of use later if the Marten is recaptured.

Messrs. Crapnell and Edwards record the following from Blackstone Edge and White Holme reservoirs at an altitude of 1,200 feet : Stoat, Weasel, Hedgehog, Common, and Lesser Shrew.

A most noticeable feature of 1935 has been the increase in the number of Common Seals which have frequented the coast in the vicinity of Scarborough. First noticed on 2nd February, they have been continuously about and have frequently entered the harbour where as many as six have been seen at one time, they fed chiefly on the Viviparous Blennies so common here, and these awkward morsels were usually brought above water to be eaten. A very young one was washed ashore during a rough sea at Cayton Bay on 30th July, 1935. It was injured by the buffeting it had received and died despite efforts to revive it. The Seals were still present so recently as 7th October.

An important record is an hitherto unrecorded ♂ Grey Seal which was caught as a pup 3 feet long on Filey Brigg in February, 1927. He was kept alive and is now a massive animal 7½ feet in length. He was exhibited at Scarborough during the summer of 1935 under the title of 'Bonzo, the largest Seal in England.' I know of only one previous Yorkshire record for this species (see *The Naturalist*, October, 1935, p. 229).

Amphibians.—Nothing of special interest has been reported in this section with the exception of the capture in a pond on Bootham Shay of an example of the Palmated Newt by Mr. C. Allen.

Reptiles.—All species have been noted in their usual numbers, which are however much less than they were twenty years ago in the Scarborough district, where the Viviparous Lizard and the Slow Worm are still to be found in the Spa grounds. Two large Grass Snakes of a length of 4 feet are recorded from Holderness and were in fine fat condition.

I am indebted to Messrs. S. H. Smith, W. J. Clarke, H. B. Booth, C. F. Procter, and other members for reports used in compiling the above report.

Pisces (S. H. Smith) : A Sea Trout, weight 2 lbs. (said to be a Kelt) was caught in the River Nidd at Hammerton Dam by Mr. R. Perry, York. The same angler caught a parr (of Sea Trout), which appears to prove that Sea Trout spawn somewhere in the Nidd ; this, however, is the first report to be made public.

Another unusual occurrence is the capture of a small Grayling in the River Ouse at Fulford Ings, below York, by Mr. H. Warner during August ; it is possible that it has dropped downstream from the Nidd, where Grayling have been restocked by fishing clubs during the year. It is most unusual to catch a Grayling at this point.

There are great numbers of large Tench in the Gale Lane Ponds, and it is reported that a specimen of the Golden Tench was taken there.

Some large Roach have been caught ; one of 3 lbs. 8 ozs. was taken from a pond near Howden, and another 2 lbs. 1 oz. by Mr. W. Daniel fishing the River Derwent at Stamford Bridge—a very heavy fish for the river ; heavy roach are generally pond fish. I personally doubt the identity, and think these heavy fish are Roach-Rudd hybrids, but as yet I have not had opportunity to examine one.

A fine Bream, 7 lbs. 10 ozs., was caught in a pond near Goole.

On 29th December, 1934, large numbers of Salmon parr were passing down the River Ouse at Fulford (below York). The spring run of Salmon was very successful, but owing to the low state of the river, numbers failed to pass Naburn Dam. On 28th March, W. West had one of 48 lbs. in his net at Naburn, and on 10th, 11th, and 12th April 80 Salmon, mostly of 10 lbs. and 12 lbs., were taken in the nets at this point.

I am glad to say the Yorkshire Fishery Board have accepted a tender to construct a fish pass at Naburn, and a start has been made with the work. This should be a most valuable improvement to the River Ouse, and in a few years be of immense benefit to both professional and amateur Salmon fishers. It will also enable the passage of Sea Trout.

The Fishery Board have also hatched and reared 550 Salmon parr, 5 ins. to 7 ins. long, at their Keld Head Hatchery. Five hundred were marked with silver tabs, Y1 to Y500 inclusive, under my direction, and released in the River Swale on 8th October for the purpose of trying to prove whether Salmon would return to the Swale (their free passage is obstructed by the weir at Topcliffe). A reward will be offered for details of marked Salmon that may be caught in the Ouse or Swale, or anywhere else where they may ultimately arrive.

On 6th October hundreds of Lampreys were trying to pass Naburn Weir, the river being in very strong spate, the upper and lower sections being nearly level, a not very usual state when migratory fish are running.

Marine Fish (W. J. Clarke) : A good deal of work has been done during the year, chiefly on the Scarborough fish market and trawlers, also a certain amount of rock pool research has taken place. Red Gurnards have been seldom met with during the year, and Grey Gurnards, usually very common, have been less so.

Tunny were first reported by the fishing boats on 13th July, 1935, 40 miles from shore off Scarborough, and they became very plentiful during August and September. Between 5th August, 1935, and 13th September, 1935, 54 were caught on rod and line, their weights ranging from 762 lbs. to 337 lbs.

A Fifteen-spined Stickleback was caught near the Lighthouse Pier at Scarborough on 2nd July, 1935. This is not a very common local species, but has been previously recorded at the same place.

Two hermaphrodite Cods have been noticed during the year, one on 29th January, 1935, and another on 21st February. Both were captured at Scarborough.

A Lesser Forkbeard, 8½ ins. in length, was washed ashore dead, but quite fresh, on the North Sands on 8th February, 1935.

An unusually large Plaice, which weighed 10½ lbs. after being gutted, was caught near Scarborough by the s.t. *Golden Gleam* on 25th March, 1935. An examination of the growth rings on the vertebrae showed it to be about 22 or 23 years old.

A prettily marked variety of the Flounder was caught in a rock pool at Scarborough on 4th May, 1935. 8⅛ in. in length, it was the usual olive brown colour on the head, shoulders, and centre of the back. On either side was a large white patch extending almost the entire length of the fish ; this area was studded with bright orange spots. The fins and tail were the usual brown colour.

A small Short Sunfish was caught in Filey Bay by J. Wyvill on 26th August, 1935.

A single Pilchard, caught amongst Herrings at Scarborough on 30th September, was the only example seen during the present year. It is not a common Yorkshire fish.

Several small Sturgeon were landed by the trawlers at Scarborough, including one 5 ft. long on 2nd January, one weighing about 4 st. on 24th April, a very small one landed on 22nd May, and one about 4 ft. long caught near Flamborough Head by a Bridlington boat. All the others were caught near Scarborough. At least one other was captured, of which particulars were not obtained.

Porbeagle Sharks were very numerous off Scarborough during the warm months. Many were caught in the Herring nets and by the Tunny anglers, to whom they were a nuisance. One which was weighed scaled 136 lb., and was about 7 ft. long.

CONCHOLOGICAL SECTION

Conchology (Mrs. E. M. Morehouse) : Another year of drought, following cold and wet weather, must have very serious and disastrous effects on the land snails, as well as the freshwater, those found in small ponds and ditches especially. The result will be seen in 1936 ; since the 1932 drought, each year has been marked by a steady decline in the numbers of certain molluscs found in particular habitats favoured by them, which have come under my notice. These have been visited from time to time, in some cases this year, 1935, not a single specimen has been observed and in others only the minimum. It was not until the drought broke that I saw many of the land species, and of these in very moderate numbers, even common examples.

Quite the best area visited this year in Yorkshire was that in and around Helmsley ; it is a district which would well repay the close attention of the Conchologist. *Punctum pygmaeum* Drap. a small mollusc

well worth recording was found in the woods adjoining Duncombe Park, also that beautiful little snail *Acanthinula lamellata* Jeffreys, from the same district. In a quarry at Ledsham, *Hellicella itala* Linné was found ; this is a new habitat for it. *H. caperata* Montague, was found also in equal, if not greater quantities. The day was very hot and everywhere dry, not at all the ideal day to find many species on the crawl.

Mr. T. Franklin observed *Subulina octona* Chemnitz in the greenhouses of Orchid Nurseries, near Leeds ; this has no doubt been introduced with the orchids. Yet another introduction which has come to my notice *Pleurdonté aspera* Fér. a native of the West Indies, to be found especially in Jamaica, it is generally among the bananas received by wholesale fruiterers in this country. They have come through this medium to Mr. H. J. Armstrong, Mr. Fred Taylor and myself. Both these species are very interesting and worthy of being recorded.

Mr. A. Smith, York, has sent me the following observations :—17th July. The following dead shells of *Planorbis umbilicatus, P. spirorbis, Limnaea pereger, L. truncatula* and *L. glabra* were found in numbers on the marshy part of Buttercrambe Moor after drainage operations. *Anadonta cygnaea* were also found, one specimen I obtained was 110 mm. in length, the shell being only ·8 of a millimetre in thickness, the growth lines being as well pronounced inside as out.

At Millington in early June, *Helix nemoralis* were very common in the pastures, a specimen with all the bands coalesced on the large whorl, below the periphery, was yellow above without any sign of banding. I have found odd specimens on several occasions. The same form occurs on the Sand Dunes of Skegness and Cleethorpes.

Azeca tridens occurred again at Boston Spa, but owing to the drought was very scarce. At Rievaulx in September a good number of *Helicigona lapicida* were found on the walls in the village, also a few *Helix aspersa*.

In the Fosse during September, near the Institution, a few *Acroloxus lacustris* were seen on the reeds. *Vivipara vivipara* were plentiful, but *Limnaea auricularia* very scarce and not so fine and large as usual.

Mr. H. Sowdon, York, reports that Dr. J. S. Gaynor and he visited the Pocklington Canal on 24th June, after the water had been drained off for the purpose of cleaning the canal, etc. Their investigations were rewarded by being able to record eighteen freshwater and one land mollusc, a total of nineteen species and varieties ; these were in varying stages of dead and dying conditions. There were thousands of snails to be seen on the mud and in the crevices.

The investigators visited the Canal again on 15th July, to ascertain if it was possible to add to the previous list ; this they were unable to do. They were surprised to find so few *Limnaea auriculavea* Linné, only one specimen was found on the mud. No type *L. pereger* Müller, and only one specimen of *v. ovata*. On the first visit one *L. stagnalis* Linné was on the mud and three on the second occasion, the young of these three mollusces appeared to be entirely absent.

The most conspicuous were the *Unio pictorum* Linné in all stages from young to adult specimens, also *Anadonta cygnaea* Linné, these were of all ages and measured from one inch to six and a half inches in length. All the other species were abundant with the exception of *Planorbis albus* Müller, *Physa fontinalis* Linné, *Valvata cristata* Müller, and *Pisidium amnicum* Müller. Only eleven specimens of *Zonitoides nitidus* Müller, were observed on both days.

When at Filey, Mr. Sowdon reports that *Helix aspersa* Müller, *H. nemoralis* Linné, *Arianta arbustorum* Linné, *Helicella itala* Linné were plentiful on the cliffs. *Hygromia rufescens* Pennant. were numerous on the Muston Road, *Hellicella virgata* Da Costa 'simply swarmed' on the bank along the Promenade. *Clausilia bidentata* Strom. were 'on the move,' but not plentiful in South Dene Wood, but *Jaminea cylindracea* Da Costa was absent.

1936 Feb. 1

(J. R. Dibb) :—Reports tend to show that although we have again had a dry summer, conditions have been more favourable during 1935 for land mollusca and to a less extent for freshwater species than in the previous year, and a number of interesting captures have been made.

A full report upon the results of the excursion to York, on 1st June, when we joined forces with the Yorkshire Conchological Society and the York and District Field Naturalists' Society has already been published in *The Naturalist* (1935, p. 191), by the Sectional President, Mrs. E. M. Morehouse. Mr. Charles Allen led the party upon that occasion with successful results.

The Second Field Meeting was held on 7th September, at Ledston Luck, and the surrounding district which resulted in a fair number of captures.

The Annual Meeting of the Section was held in Leeds, on 12th October, with the President in the Chair. It is proposed to arrange excursions to the York District and to Adel, Leeds, in June and September respectively next season.

ENTOMOLOGICAL SECTION

Hemiptera (J. M. Brown) : The past season has been a more successful one than I have had for some years, either because Hemiptera have been more conspicuous, or else collecting has been more assiduously carried on, with the result that I can add to the county list five fresh species of Hemiptera.

At the field meetings of the Yorkshire Naturalists' Union held at Hovingham in August, and at Helmsley in September, some very successful collecting was done, over 130 species being taken at Hovingham, including those species mentioned as new to Yorkshire. These are :—

Cyrtorrhinus pygmæus Zett.
Bythoscopus microcephala H.S.
Stictocoris preyssleri H.S.
Delphacodes leptosoma Flor.
D. exigua Boh.

In addition, a good number of less well-known species were obtained, including :—

Piesma maculata Lap.
Cymus claviculus Fall.
Megacœlum infusum H.S.
Heterotoma meriopterum Scop.
Macrotylus solitarius Mey.
Eupelix cuspidata Fab.
Doratura stylata Boh.

and the scale-insect, *Orthezia urticæ* L., taken in numbers on Stitchwort.

At Allerthorpe Common, in September, I took *Pantilius tunicatus* F. and *Delphacodes leptosoma* Flor., both additions to the insect fauna of the Common.

Among some insects sent in by Mr. J. Wood were *Harpocera thoracica* Fall. and *Cyllocoris flavoquadrimaculatus* De G., both from Ripon.

In the Whitby district, Mr. H. Britten, Jun., has done some intensive collecting, and besides taking a good number of species which are additions to V.C. 62, has added four more species to the county list. These will, no doubt, be recorded in due course.

Neuroptera (J. M. Brown) : The best species taken this year is *Osmylus fulvicephalus* Scop., which I obtained in Ecclesall Woods, Sheffield, the only previous records for Yorkshire being Castle Howard and Forge Valley.

Other species taken include *Hemerobius marginatus* Steph. from Helmsley and Hawes, *Chrysopa tenella* Schn. from Ecclesall Woods, *Coniopteryx tineiformis* Curt. from Malham, *Semidalis aleurodiformis* Steph. from Ecclesall Woods, and among Mr. Wood's insects, *Sympherobius elegans* Steph. and *Conwentzia psociformis* Curt., both from Keighley.

Psocoptera (J. M. Brown) : One species new to the county can be added, *Psocus gibbosus* Sulz., a comparatively large species, taken at

Hovingham on Oaks. The curious *Lepidella kellogi* Ribs. (*Pteroxanium squamosum* End.), previously taken only at Ingleton, occurred at Helmsley. Other good species are *Psocus nebulosus* Steph. from Hovingham, and *Ectopsocus briggsi* McL. from Helmsley and Hovingham, a species so far taken only in V.C. 62.

Plecoptera (J. M. Brown) : No new Stoneflies can be recorded this season, but the less-known *Leuctra moselyi* Mort. and *Amphinemura standfussi* Ris. both occurred at Hovingham. *Tæniopteryx risi* Mort. occurred at Hawes, *Perlodes mortoni* Klap. at Stalling Busk, and *Capnia nigra* Pict. in Ecclesall Woods, Sheffield.

Ephemeroptera (John R. Dibb) : The report presented at our last meeting was incomplete owing to the large number of additional records provided at that meeting and it was decided to include the results of 1934 in the present report.

Nothing of outstanding interest was noted upon the Union's 1934 excursions and the species which occurred were reported in *The Naturalist* by Mr. J. M. Brown. A new County record was made by Mr. Brown through his capture of a single male example of the rare *Ameletus inopinatus* which occurred at Malham. I have been able to trace only three previous records for this species in the British Isles which are Loch Rannoch, Brotherswater, and Braemar, so that its appearance in Yorkshire is of great interest. Mr. Brown also recognised *Ecdyonurus fluminum*, a species which has been, and probably still is, confused with *E. venosus*.

A very fine series of some 70 adults and 200 nymphs comprising 16 species were taken during 1934 by Mr. John Wood mainly in the Keighley district. These form a magnificent addition to the comparatively small number of May-fly records.

Although the writer has had little opportunity to judge first hand the conditions during 1935 the records received tend to show that May flies have been in strong evidence this year and apparently little affected by the past two years exceptionally dry summers.

Four widely distributed species (imagines and subimagines) were noted by Mr. Brown on the Union's excursion to Tanfield in May, and he remarks upon the abundance of the nymphs of *Heptagenia sulphurea* and *Ecdyonurus venosus*. The last-mentioned species seems to have occurred very abundantly as I have received numbers of imagines, subimagines, and nymphs from numerous localities in the county.

Mr. Wood has again collected Ephemeroptera systematically throughout the year and has found *Rhithrogena semicolorata*, *Ecdyonurus venosus*, and *Baetis rhodani* to have been present in good numbers. The bulk of his 1935 material awaits identification.

Mr. Charles Allen has sent for identification a large number of nymphs taken from the Rivers Greeta and Wenning, near Bentham, and from a pond in the vicinity of High Bentham, which provide ten species ; and a number of nymphs of two species from the York district.

A number of additional records of imagines taken by Mr. Hincks have also been made.

During 1933 an attempt was made to breed some of the free swimming species from nymphs in advanced instars, but *Cloeon dipterum* was the only species which emerged. The remarkable feature of this species appears to be its long length of life as an imagine. Examples were kept alive in captivity for six weeks. During the past two years isolated examples have been noted from situations of considerable distance from water and after capture have lived up to $2\frac{1}{2}$ weeks. A specimen occurred in my garden at Moor Allerton and another in the centre of this city in June. The observations which have been made upon this species lead me to suggest that it is probably one possessing the longest adult life of any of the May-flies.

I am particularly desirous of obtaining nymphs of the genus *Baetis* and shall welcome material in this section as, so far as I am aware, the differentiation of the species of *Baetis* has not been worked out.

Mr. Hincks and I reported in the *Journal of the Society for British Entomology* the occurrence of a probable addition to the list of British Ephemeroptera. The species appears to be *Ecdyonurus forcipula* (Pict.), and so far we have only seen examples in the nymphal state. We took it at Scarcroft, near Leeds, some years ago, from Mosedale Beck, Wastdale, in September, 1932, and from the River Skell, near Ripon, in August, 1933. Mr. Brown has captured the same nymph in the Sheffield district and in Derbyshire, and Mr. Wood found it in the Keighley district.

I would add my thanks to the many friends who have sent in records and specimens, and they are specially due to Mr. John Wood and Mr. Charles Allen for their large supplies of material.

Coleoptera (W. J. Fordham) : The past season has not been a very good one for beetles, but many nice species have been taken.

Mr. Britten has done exceedingly good work in the Whitby area and has added 14 new species to the Yorkshire list, namely, *Aleochara diversa* (Raithwaite and Mulgrave Woods), *Oxypoda induta* (Skelder), *O. sericea* (Whitby and Skelder), *Atheta xanthopus* (Glaisdale), *A. clientula* (Mulgrave Woods), *A. dubia* (Skelder and Sandsend), *A. nitidicollis* (Goathland), *Philonthus rectangulus* (Whitby), *P. vernalis* (Whitby), *Xantholinus atratus* (Whitby), *Catops fuliginosus* (Mulgrave Woods), *Corticarina similata* (Mulgrave Woods), *Orchestes pilosus* (Robin Hood's Bay), and *Anthonomus brunneipennis* (Robin Hood's Bay).

Mr. J. M. Brown has taken *Phloeonomus planus*, new to Yorkshire, at Hovingham, where he also took *Phyllobrotica 4-maculata*, *Metoechus paradoxus* and *Orchestes avellanæ*, and *Endomychus coccineus*, *Platycis minuta* and *Chrysomela varians* at Helmsley.

Mr. J. R. Dibb records *Tetrops præusta* and *Molorchus minor* from Buttercrambe Woods.

Mr. W. D. Hincks has taken *Hylastes cunicularius* at Buttercrambe Woods, new to the county.

Mr. G. B. Walsh has taken numerous species in nests of *Formica rufa* at Farndale, including *Dendrophilus punctatus* and *pygmæus*, both new to Yorkshire. He also records *Polydrusus pilosus*, only recently added to the British list, from seven localities in V.Cs. 61, 62, and 65, and *Caulotrupis æneopiceus* from timber at York (Mr. A. Smith), both new to Yorkshire. Mr. M. D. Barnes records *Blethisa multipunctata* commonly beneath stones in its old locality, Ryhill Reservoir, and *Pachytodes cerambyciformis* frequent on hogweed at Elland Park Wood and *Metoechus paradoxus* in Coxley Valley near Wakefield. Mr. Bayford has also reported *Metoechus* at Kexboro (G. H. Sutton) and has taken *Conopalpus testaceus* var. *flavicollis* at Birthwaite. This latter is new to Yorkshire. Mr. J. Wood has taken *Stenostola ferrea* in Shipley Glen and *Staphylinus stercorarius* at Hovingham.

Mr. T. Stainforth records *Platypus cylindrus* from a woodyard in Hull in imported oak, *Mesites tardyi* at Robin Hood's Bay, and *Carabus arvensis* and *nitens* from Strensall Common.

Diptera (Chris. A. Cheetham) : This year has proved somewhat disappointing from a collecting viewpoint, but in doing so it has emphasised the statement in last year's report that insects are more noticeable in years of unsettled weather, as then they are not able to get through their flight and mating period as quickly as in a fine summer. The Hornsea meeting was rather too early for Diptera, though a few were taken. At Tanfield I had my first experience of swarms of Sandfly, *Simulium reptans* L., but I could get no evidence of any biting by these insects among our members. The Whitsuntide Meeting at Bentham

brought some interesting species, and later visits to this district added to these.

Dr. Fordham has published some interesting captures, including additions to the Yorkshire list, and Mr. W. D. Hincks caught some good flies at the Sectional Meeting at Buttercrambe and elsewhere. Mr. E. G. Bayford records *Stenopteryx hirundinis* from a young Swallow in school grounds, Kexboro (G. H. Sutton), and he sent me specimens of *Forcipomyia picea* Winn., bred from pupæ in decaying timber from Bretton Park, Good Friday, and which emerged 29th April, 1935. Mr. W. H. Burrell sent me several specimens of *Sciara modesta* Staeg., of which he gave the following details : *Orthodontium gracile* Schw. var. *heterocarpum* Wat., collected at Bolton Abbey in immature condition January, 1934, ripened its capsules in April and spores were placed 12th April, 1934, on peat and decaying birchwood (previously sterilised by heat) in a flower pot. A green film of protonema appeared in about a month, which remained as a protonema without buds for twelve months. During the summer of 1934 *Sciara modesta* infested the pot, showing no inclination to escape from the room by the open window ; several milk-white larvæ spun webs on the birchwood *feeding on the protonema*, about half of which they consumed before I removed them and put the pot out of doors to get rid of the flies in October. When brought indoors again in January, 1935, flies were still present and both sexes continued to emerge from their cases ; they were eventually got rid of by daily collection to check breeding. About twelve flies per week were taken for several weeks. No record was kept of the total number seen during the year, but one hundred would be a low estimate. The pot apparently cleared of flies was again put in the garden about June and brought indoors 1st October, 1935. Young moss plants are arising and no flies were seen during the next few days. It seems probable that the flies came in the first instance through the open window of my room as the pot and its contents were sterilised by boiling and no living matter but the home-grown spores was added.

Hymenoptera Aculeata (R. Butterfield) :—The excessive drought in the spring and summer months, during which Aculeates are active, from March to August inclusive, proved unfavourable to insects of this group, possibly from dearth of moisture which facilitate emergence from their pupæ. They were most in evidence in early spring, and flowers of the bilberry attracted a fair number of *Andrena*, though no unfamiliar species were noted. Towards the end of August living blooms attracted many, and *Nomada solidaginis*, parasitic on *Andrena fuscipes*, was seen in not uncommon numbers on moors near Cropton, and in places previously noted, this proving that it is fairly widely distributed in the county. Mason wasps which can endure a reasonable drought have been by no means as plentiful as could be expected. It is worthy of mention that *Symmarphus gracilus* and *S. sinuatus* were obtained during the Y. N. U. excursion to Hovingham.

Ancistrocerus parietinus I found not uncommon in my garden. On the heather moors near Levisham, in August, were seen great colonies of *Colletes succincta*. *Halictus tumulorum* and *H. leucopus*, *Pompilus gibbus* and *Leptothorax acervorum* were also seen on the same moor.

Lepidoptera :—Two specimens of the clouded Yellow butterfly, *Colias edusa* Fab. have been caught this year in our area, one at Beamsley the other at Austwick Moss. A Milkweed butterfly, *Danaus plexippus* was caught by a boy in a garden at Storith, near Bolton Abbey. Mr. Rosse Butterfield says the Common Blue butterfly, *P. icarus* von Rott. appeared on the Riddlesden side of Stockbridge this year ; it has not been in this district for nearly 30 years. Butterflies have not been plentiful this year and few Red Admirals and Painted Ladies were noted this autumn.

BOTANICAL SECTION

(Chris. A. Cheetham) :—Again we have to record the loss of some old and valued members. Some of us remember the Presidential Address on Weeds delivered by Mr. A. H. Pawson, whom we have lost since our last meeting. Others may recall the Union's visit to his home and garden at Farnley. Mr. T. J. Foggitt did not come to our meetings but he contributed to this report last year and he will be missed by many botanists. He was a son of one of the older generation of Yorkshire botanists who helped to found this Union.

The Section has been well represented at the Excursions and the study of the life history of the Juniper on Moughton Scar has been furthered by the article on its age and rate of growth, written by Mr. A. Malins Smith in *The Naturalist*, pp. 121-130.

The year has been warm and dry, but late cold spells in Spring and later on heavy rain falls in some places, added variety and the result is seen in the variation of plant growth in different districts. The Spring flowers were not affected alike. Generally speaking, shrubs and trees were early in bloom but smaller plants were held back by the cold winds and were late. Amongst the Alpines the Purple Saxifrage was an early flowering species, being in flower on the Pen-y-ghent cliffs on 24th February. The Hawthorn was also early and in full flower in mid-May, which is exceptional in Yorkshire.

As was the case last year most species flowered well, but for very short periods and if one missed the exact time it appeared as if the bloom had failed.

An early hay season gave many species of flowers opportunity to make a second display, and in the Craven district the Hairy Hawkbit appeared as full flowered after the hay had been cut as it had been previously. The Orchids have flowered no better than last year. In the Austwick area the Marsh, Butterfly, and Fragrant have been much scarcer than last year. Mr. N. Frankland says : ' It has been a poor year for Orchids. Fragrant Orchids have been less in number and poor in quality. I do not know any that have made a special show.'

Many observers remarked on the fine display of the Ling on our heather moors ; this again was very short lived, and it seemed that all the plants had come to full flower at the same moment and so kept the flowering period to a short but vivid display. The fruiting of the trees opens up a series of questions. Well-ripened wood from a good summer's weather is generally accepted as one incentive to good fruiting, but this is certainly not so this year. Most observers suggest the May frosts as the cause of the many failures, but if we take the most striking failure, the Ash, our previous records seem to show definitely that a failure follows a year of heavy fruiting. We may get medium crops in following years, but never a second good crop following an abundant season. This has been very marked lately—1930, full ; 1931, none ; 1932, full ; 1933, none ; 1934, full ; 1935, none. This factor must be remembered.

Mr. A. M. Smith says : ' The Ash, which fruited so well last year, has none at all this, and we know that the main reason is that it did not flower ; after my observations last year I was prepared for some interesting details of possible change of sex of the flowers, but all this was wiped out by the almost complete absence of flower. Nevertheless, a few flowers appeared on some trees, and some of these were bisexual, so that, as no fruit at all followed, the lack of flower cannot entirely be blamed for the absence of fruit. I wrote in my diary on 25th May, " On Friday, 17th May, there was heavy snow, and for several nights about that date there were sharp frosts, up to 13° F. of frost. This fell in the middle of the flowering season of the Oak and the Crab Apple. What will be the result? " The autumn has answered this question, and it

is pretty clear that the spell of frost and snow had disastrous results on fruiting generally.'

Miss C. Johnson, however, says, at Walton : ' The quantity of Ash flowers was large, but they have failed to produce fruits.' Mr. Haley says : ' The Ash near Ravensthorpe has not produced a single flower or fruit so far as I have seen.' Mr. Wattam says : ' Few trees displayed blossom. I have seen no fruit anywhere in the district.' Miss C. Rob, writing from Thirsk, says : ' Ash suffered very badly in the frost in mid-May ; all the flower in this part of the county was nipped, and there is no fruit at all.' Mr. A. Wilson says : ' As far as my experience goes, in this part of North Wales the Ash trees are barren.'

In some cases there is variation in different districts. I find Beech fairly good in the north-west, and Mr. N. Frankland agrees. Mr. A. Malins Smith saw plenty of fruit in the East Riding, but in the south-west Messrs. Haley, Wattam, and Brown find it poor, and so does Mr. A. Wilson in North Wales. We generally agree that Oak and Sycamore fruitage is poor, though Mr. Wilson finds the Oak loaded with acorns. All seem to agree that Rose, Blackberry, Guelder Rose, and Hazel are well fruited. The Hawthorn is variable ; when fruited the trees are very full, but a great many are barren.

The question of secondary growth again brings a difference of views. I think there has been a notable display this year, and I found the Common Elm in the neighbourhood of Jervaulx to have much more than I can remember previously. The Oak in many districts was far above the average, and Lime, Beech, and Sycamore showing quite definitely. Mr. A. Wilson is in agreement, for he says : ' There was an exceptionally large amount of secondary growth on the Oaks, etc. Perhaps this may have been due to the check the trees received by the severe cold spell between the 12th and 23rd of May, which followed the unusual warmth at the beginning of the month. No such cold appears to have occurred so late in May since the snow and frost of May, 1891, which I well remember. On that occasion the minimum temperature in the screen fell to 23.8° at Meltham, near Huddersfield, and to 22.1° at Driffield on the 18th. This compares with 28° at Meltham on the 22nd, and 21° at Eskdalemuir on the 15th this year. There was not much damage to vegetation this year about here, but in many parts of England it was very great.' Mr. W. B. Haley, writing from Ravensthorpe, says : ' Secondary growth on the Oaks has been a marked feature this year. I have also noticed it on the Beech, Elm, Lime, Poplar, and Sycamore. Last year there was scarcely any.' Mr. A. M. Smith says : ' Secondary growth was abundant on many trees in July especially the Oak.' Miss C. Johnson says : ' A noticeable secondary growth is to be seen on the Oak trees in early September.' Mr. N. Frankland says : ' Secondary growth has again been in evidence, but not so pronounced as in some past years. It seemed very variable, too, on trees of the same species growing near together. Sycamore, Oak, and Beech were most affected.' On the other hand, Mr. W. E. L. Wattam says : ' There has been no secondary growth on our woodland trees, as was so noticeable a feature in 1931.' Mr. A. Wilson's suggestion of damage by cold weather in May seems very possible, for it was certainly the trees whose branches were most exposed at the corners or edges of woods, or which had been damaged at some previous time by breakage or pruning, which showed most evidence of this growth. There are many trees to which I can point which always show the effect on definite branches in greater or less degree every year.

Dealing with seedlings, Mr. W. E. L. Wattam says : ' The drought conditions of 1934 had not, apparently, much effect upon the full ripening of the seeds of our wildlings, judged by the generous masses of seedling plants practically everywhere. Those of Ash, Oak, Sycamore, Beech, and Elder have been very prominent. Burnt Furze and Ling areas have soon

become densely populated.' Mr. W. B. Haley says : ' We have had a great number of Ash seedlings and a fair quantity of Beech. One can always find plenty of Sycamore seedlings, but this year is remarkable, the result of last year's heavy crop of fruit.' Mr. N. Frankland says : ' The dry summer seemed to do most damage among the seedlings. Early on, Beech seedlings were very numerous, more so than usual, and the continuous dry weather burnt them up.'

None of my correspondents mention the Hawthorn. It has produced a great number of seedlings in many places where I have been this year. The drought has not affected the Craven District as seriously as it has other parts of the country. Mr. Wattam says : ' Pasture and meadowlands suffered excessively, becoming markedly brown. These conditions were in no small degree accountable for much of the sparse and immature fruit crops produced by the dominant trees in our district (Oak, Beech, Birch, Sycamore, and Horse Chestnut), their nutrition being checked by the drought conditions of the summer months. Indeed, the trees of the clay soil woodlands began to show much shrivelling and casting of foliage by mid-August.'

At our annual meeting Professor J. H. Priestley mentioned the wilting of trees, which was induced by the drought, citing the case of Ash on Otley Chevin, and Mr. Smith said he had noticed the effect on Beech in the East Riding. A great variation in trees of the same species, some still green at the end of September, others with leaves faded and falling, had been observed, and it seemed possible that this wilting might have been partly responsible. The Sycamore is generally said to have flowered well, but Mr. Smith says : ' A good deal of fruit was set, but in June there was a great fall of immature fruits, and few were left to ripen.' Other writers suggest that the drought was the cause of the failure of the bloom to set fruit. Miss J. Grainger said that bee-keepers in the Huddersfield district reported a great shortage of Sycamore and Lime honey, although these trees had flowered well ; on the other hand the Heather honey had been plentiful. Miss C. Johnson said : ' The Lime was really excellent this year. The flowers loaded every branch, and their scent was sweet. They produced good, round fruits, with as many as three fruits to one branch.'

Mr. Haley says : ' The following alien plants are still with us, *Convolvulus americana* has made a glorious show on the Calder banks in spite of the obtrusive *Impatiens glandulifera*. *Coronilla varia* still holds its own, although a lot of it has been taken for the gardens, *Sisymbrium pannonicum*, *S. austriacum*, and *Claytonia sibirica*. On our rubbish tips and waste places I have come across the following casuals : *Hyoscyamus niger*, *Cichorium intybus*, *Thlaspi arvense*, *Reseda lutea*, *Medicago falcata*, *M. sativa*, *M. maculata*, *Verbascum blattaria*, *V. nigrum*, and a fine show of *Lychnis githago*, and *Delphinum ajacis*. In some of the allotments a quantity of *Claytonia perfoliata* has made its appearance.' Miss C. Rob says : ' The alien flora of Tanfield Mill has suffered, and only very ordinary plants have been found. At Pilmoor several good things, including *Pilularia*, have not been seen this summer, their habitat being completely dried up owing to the drought. Some cultivated trees that have not borne fruit for three or four years have good crops on this year. There is a fair crop of plums and damsons, and a very good one of pears and apples.' Mr. Wattam agrees that pears and apples are very good, and Mr. Frankland says apples and plums have done well this year.

Ecological Committee (Miss D. Hilary) : Members of the Committee have been present at all the ordinary meetings of the Union, and the special work on the degeneration of the Juniper on Moughton Fell has been quietly going on throughout the year.

A field meeting was held at Austwick on 11th May. The main

object of this meeting was to make a detailed map of the whole Juniper area, as it was decided that such a map would be very useful for future comparison. Unfortunately, owing to a steady downpour of rain, this work had to be abandoned in the early afternoon and still remains to be finished.

Following up observations made at a field meeting last year by careful work in the laboratory, our President, Mr. Malins Smith, has made extensive investigations on the age and rate of growth of the Juniper on Moughton. The results of his work have already appeared in an article published in *The Naturalist* in June, 1935.

The investigations concerning the germination of the Juniper seeds and the growth of the seedlings which Mr. Wattam began in 1933 have been continued and he sends the following results :—

1. Of the twelve fruits planted on 28th October, 1933, in sandy soil obtained from underneath the large Juniper south of Plot 3 and kept in a heated greenhouse, two seedlings emerged on the 30th March, 1935. Both were forced to the surface of the soil during emergence. The radicle never penetrated the soil although powdered earth was sprinkled over each plant. They both died.

2. Of a further twelve fruits planted 28th October, 1933, in sandy soil obtained from near the bared plot, one emerged on 21st May, 1935. This was likewise forced to the surface of the soil during emergence and it died. Another seedling emerged on 5th June, 1935 ; its growth had been extremely slow.

3. Of the thirty-six naked seeds planted on 12th May, 1934, in sandy loam, eleven proved fertile. The dates of their emergence were as follows :—

10th March	1935	...	...	2 seedlings.
28th ,,	,,	...	...	2 ,,
29th ,,	,,	...	...	1 ,,
8th April	,,	...	...	3 ,,
12th ,,	,,	...	...	2 ,,
18th ,,	,,	...	...	1 ,,

Facts of interest which emerge from these observations are :—

1. Apparently the naked seed produces better results than the whole fruit. The fruits from which these naked seeds were dissected were gathered on the 23rd September, 1933, and were from the female flowers pollinated in June, 1932. Therefore, assuming that the appearance of the seedling in its natural habitat is in the months of March or April, there is a period of practically three years from the time of pollination to the date of emergence of the seedling.

2. The seedlings from the naked seeds have been grown in soil devoid of any calcium content and have thrived thereunder. The one remaining seedling of the four which emerged from the fruits planted in soil obtained from their native habitat is retarded in growth.

3. During emergence from the fruit the forcing of the whole seedling to the surface of the soil would seem to prove that numbers of seedlings are killed at their germination.

4. The rate of growth is slow, the height of the largest plant is only three inches after growing under sheltered conditions for 181 days (10th March to 7th September, 1935).

With regard to the damage done to Juniper by rabbits, Mr. Malins Smith has information from two sources that rabbits seem to avoid Juniper in the south of England. In order to get some definite evidence about this on Moughton, our next step must be the fencing in of an area in order to keep out rabbits.

Dr. Grainger sends the following account of another piece of ecological work which is being done at Huddersfield under his direction. The members of the Huddersfield and District Amalgamated Naturalists'

Societies are making a botanical survey of the local clough known as ' Dean Nick.' Detailed phenological work, a soil survey, work on plant root systems in relation to soil types, and a biological examination of the stream have been accomplished. This is the second year. Joint meetings are arranged once a month and members make more frequent visits. The preliminary studies on plant root systems have already appeared in *The Naturalist.*

Flowering Plants (W. A. Sledge) : It is with deep regret that we have to record the death during the past year of Mr. T. J. Foggitt, who has acted for some years as recorder for the North Riding. He had an unrivalled knowledge of the Yorkshire flora, and made many additions to the county records.

Particulars will be found in *The Naturalist* of the botanical results of the Yorkshire Naturalists' Union meetings at Bentham, Tanfield, Hovingham, and Penistone. The Bentham meeting resulted in three new records in *Agrimonia odorata, Saxifraga Geum,* and *Lonicera Periclymenum* var. *quercifolia,* whilst some interesting species were reobserved on the Tanfield excursion. At Hovingham *Actæa spicata, Astragalus glycyphyllos, Specularia hybrida,* and *Calamagrostis lanceolatus* were notable records, though none is new to the area. From the same area Miss Rob records *Ranunculus circinatus* from Castle Howard, and it is satisfactory to hear that *Dianthus deltoides* persists at Terrington in its only North Riding station, and that *Lysimachia thyrsiflora* is still to be found at Leckby Carr. Two mints new to V.C. 62 are recorded by Miss Rob, viz., *Mentha gentilis* from Kilburn, and *M. piperita* × *aquatica* from Aldborough. *M. gentilis,* recorded in this report two years ago from the West Riding side of the river at Tanfield (where it grows with *M. spicata*), also occurs on the north side of the river in V.C. 65.

During June, when the Botanical Society and Exchange Club held a field meeting at Clapham, *Viola canina* was found at Austwick Moss, a welcome additional station for a species which is very rare throughout the county. From the same district I have specimens of *Callitriche obtusangula,* new to V.C. 64. Mr. Malins Smith records *Ranunculus Lingua* from a new station at Heaton, near Bradford, also *Carex divulsa* from near Bingley. The latter record is a very interesting rediscovery of an old station originally recorded by Miall, but bracketed as either erroneous or extinct in Lees' *Flora.*

From East Yorkshire Mr. Smith records *Glyceria procumbens* from near the North Landing at Flamborough, a new record for V.C. 61 ; also *Alopecurus agrestis* from Long Riston, *Mentha viridis* between Long Riston and Catwick, *Serratula tinctoria* between Benningholme and Arnold, and fertile fronds of *Lastrea Thelypteris* from Pulfin Bog. Robinson does not include *Alopecurus agrestis* in the East Riding Flora, though it is given in the Comital Flora by Druce, and he says he never got any but barren fronds of the Marsh Fern at Pulfin.

Mr. T. Franklin has two interesting records for the West Riding, viz., *Ceratophyllum demersum* from Newton, near Castleford, and *Campanula rapunculoides* from between Darrington and Wentbridge. The latter is also a very interesting confirmatory record from the locality whence this species was first recorded in West Yorkshire by James Backhouse in 1830.

As regards alien plants, Mr. Malins Smith records *Caucalis latifolia* from Apperley Bridge and *Coriandrum sativum* from Shipley, whilst Miss Rob has several interesting species from the Thirsk district. These include *Lathyrus tuberosus, Coriandrum sativum, Camelina sativa, Erysimum orientale,* and *Hordeum jubatum* from Topcliffe Mill (V.C. 62), and *Papaver hybrida* from Tanfield Mill (V.C. 64). The alien Dodder, *Cuscuta suaveolens,* which appeared in a beet field near Skipton two years ago, occurred this year in a clover field at Catton, near Thirsk.

(*To be continued*)

COLLECTING APPARATUS.

Nets.	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

The EARLY HISTORY *of the* NORTH RIDING

By WM. EDWARDS, M.A.

Demy 4to (9″ × 11¼″), 283 *pages, with* 16 *plates, frontispiece in sepia, and Map of the North Riding at end. ull cloth* **10/6** *net, post free* **11/3**. *Edition de luxe, full leather, gilt top,* **21/-** *net, post free* **21/9**.

CONTENTS :—I. Prehistoric Times—II. The Romans—III. The Anglican Kingdom of Northumbria—IV. Pre-Conquest Monasteries—V. The Northmen—VI. The Norman Conquest and Settlement—VII. Political History under the Normans and Early Plantagenets—VIII. The Feudal System—IX. The Barons—X. North Riding Castles—XI. Thomas, Earl of Lancaster—XII. The Danger from the Scots—XIII. The Foundation of the Religious Houses (I.)—XIV. The Foundation of the Religious Houses (II.)—XV. The Life and Works of the Monks—XVI. The Wealth and Power of the Religious Houses—XVII. Churches and Chantries in the Middle Ages—XVIII. Town Life in the Middle Ages—XIX. Country Life in the Middle Ages—XX. The Forests—XXI. Early Yorkshire Pedigrees—Index of Place Names ; Index of Personal Names ; Index of Subjects.

The Manchester Guardian says :—" This is a readable, popular history from the New Stone Age to the fifteenth century, with chapters on the feudal system, on the numerous monasteries in the district, and on the daily life of monk and layman in the Middle Ages. In the period to which it relates the Riding was the scene of many foreign invasions and of much civil war, and the author's object has been to show the relation of the local history to that of the nation. The volume contains many illustrations, and the price is astonishingly low for so handsome a work.'

LONDON : A. BROWN & SONS, LTD., 5 FARRINGTON AVENUE, E.C.4.
AND AT HULL.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- *per volume, or post free* 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126 Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

NORTH WESTERN NATURALIST

A Scientific and Educational Journal (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

Edited by A. A. DALLMAN, F.C.S., in collaboration with

H. Britten, F.E.S. — C. L. Walton, M.Sc., PH.D.,
W. E. Collinge, D.Sc., F.S.A. — Rev. G. H. Carpenter, D.Sc.
J. W. Jackson, M.Sc., F.G.S. — H. E. Forrest, F.L.S.
R. H. Corstorphine, B.Sc. — F. E. Weiss, D.Sc., F.R.S.
A. Wilson, F.L.S., F.R.MET.S. — T. A. Jones.

Communications to :—

Editorial.—A. A. Dallman, F.C.S., 12 Tickhill Road, Doncaster.

Business.—T. Buncle & Co., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. Eagle Clarke, F.R.S.E., and F. Boyes.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. Fortune. F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

London : A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C. 4.
And at Hull.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

Edited by J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, **6/-** *post free. Single Parts,* **1/3.**

All communications to be addressed to—

W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

Printed by A. Brown & Sons, Ltd., Perth Street West, Hull, and published by A. Brown & Sons, Ltd., at 5 Farringdon Avenue, in the City of London.
February, 1936.

ARCH, 1936

No. 950
No. 723 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

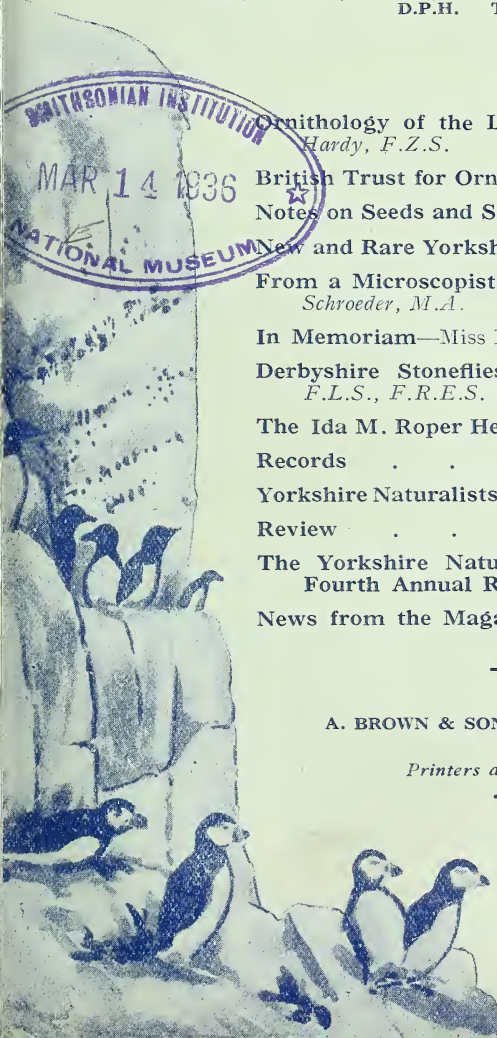
Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
F. A. Mason, F.R.M.S.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

SMITHSONIAN INSTITUTION
MAR 14 1936
NATIONAL MUSEUM



Contents

	PAGE
Ornithology of the Liverpool Area, 1935—*Eric Hardy, F.Z.S.*	49-52
British Trust for Ornithology	53-54
Notes on Seeds and Seedlings—*W. E. L. Wattam*	55-56
New and Rare Yorkshire Fungi—*T. Petch*	57-60
From a Microscopist's Note Book—*W. Lawrence Schroeder, M.A.*	60-61
In Memoriam—Miss E. M. Pilkington—*J.M.B.*	61
Derbyshire Stoneflies—*James M. Brown, B.Sc., F.L.S., F.R.E.S.*	62-64
The Ida M. Roper Herbarium—*W. H. Burrell*	65
Records	65-67
Yorkshire Naturalists' Union ; Vertebrate Section	68-69
Review	69
The Yorkshire Naturalists' Union's Seventy-Fourth Annual Report for 1935 (*Concluded*)	70-72
News from the Magazines	54, 72

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

WINESTEAD AND ITS LORDS

The History of a Holderness Village. By NORMAN JAMES MILLER. M.A., Rector of Winestead, 1890-1920. With a Foreword by THE ARCHBISHOP OF YORK. 258 pages, demy 8vo, 9 plates and 5 illustrations, quarter-bound cloth. 10/- net, or post-free, 10/6.

"Parish history is a notable aid to the cultivation of a keen national spirit. An excellent example is 'Winestead and its Lords,' by the late Canon N. J. Miller. The old church there is a shrine of English history, and the Rector holds his Rectory with house and glebe in unbroken succession from the appointment of Nicholas Maleth in 1237. Every phase of the making of England is illustrated in this chronicle of a quiet corner in 'the mersshy contree called Holdernesse,' as Chaucer describes it. Winestead was the birthplace of Andrew Marvell, and in his poems he recalls the lowly parsonage in which he was born."—*Morning Post.*

Obtainable from all booksellers

A. BROWN & SONS, LIMITED, 5 Farringdon Avenue, London, E.C.4.
AND AT HULL.

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS.

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net.

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.
LONDON: A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE E.C.4.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

ORNITHOLOGY OF THE LIVERPOOL AREA, 1935

ERIC HARDY, F.Z.S.

ROOK.—Nearly all local rookeries showed a nest count decline on 1934 figures. Woolton Wood, 199 nests (1934, 272 ; 1933, 165 ; 1932, 221 ; 1931, 183 ; 1930, 221) ; West Derby and Croxteth Park, 144 (152, 207, and 126 in previous years) ; Dovecot (Knotty Ash), 40 (55, 32, 21) ; Sefton, 23 ; Reynold's Park, 9 (13, 23, 11) ; Woodlands Road, Aigburth, 7 (1934, 12) ; Springwood, 3 (1934, 2).

BRAMBLING.—Flocks on migration at Childwall Woods, inside Liverpool bounds. January (first week, gone second week).

GOLDFINCH.—Miss M. Henderson (L.N.F.C.) reported to me two at Bebington, Wirral, end of September.

CROSSBILL.—Recorded by me at Rough Wood, Simmonsurd, in July, also reports from Hightown, Delamere, and North Wales.

SKYLARK.—Mr. G. E. Barker (L.N.F.C.) reported a marked passage North on Wallasey Leasowe sand dunes week end of April 1st, and there was still evidence of the passage on a reduced scale when I went over the area with him a few days later. On October 5th, in mid Wirral (Arrowe Park, Irby Hill, Thurstaston Heath), I and others of L.N.F.C. noted a southward movement or S.W. one in progress.

WHITE WAGTAIL.—I saw one at Liverpool Sewage Farm along with Pied Wagtails, June 8th.

DIPPER.—Mr. W. French, L.N.F.C., saw one at Liverpool Sewage Farm brook, September 27th.

FIELDFARE.—I saw a late one at Freshfield golf course, May 5th.

RING-OUZEL.—I watched one through glasses in my garden at Woodsorrel Road on the outskirts of Wavertree, Liverpool, feeding on berries, October 19th. It frequented the adjoining allotments and returned to my neighbour's garden and my own two days later, then left. It is rarely seen on passage on Merseyside.

WHEATEAR.—I watched one at Liverpool Cathedral Birds' Sanctuary in heart of city slums, October 14th.

BLACKCAP.—I found a pair nesting in Mull Wood, Croxteth Park. This warbler is very thinly distributed on Merseyside.

STARLINGS.—Childwall Starling roost, Liverpool, which held 25,000 birds in the winter of 1933, had but about 2,000 in the 1934-35 winter.

RED-BACKED SHRIKE.—At 5 a.m. on June 23rd I watched

MAR 12 1936

a male in a young birch tree by the Thor's Stone on Thurstaston Common, Wirral, and was able to show the bird to some ornithologists of the Liverpool Naturalists' Field Club who had just completed an all night ramble. The red-backed shrike is very rare in Wirral, and the last previous record I have verified was at Wallasey in 1930.

Short-eared Owl.—Unusually numerous on the West Lancs. mosslands in early 1935. I watched some at diurnal hunting at very close range on the Sefton Meadows, and exhibited one killed alighting on electric railway near Aughton, before Liverpool Naturalists' Field Club meeting. Sportsmen complained of them taking snipe but I saw them hunting only mammals.

Turtle Dove.—This bird continues its extension into mid-Lancashire from the S.W., and I found birds nesting in Croxteth Park, at Kirkby Moss Woods, Halsall, and Knowsley Park, which are well away from Ainsdale pinewoods, which have wrongly been described as the first Lancashire nesting place.

Black-headed Gull.—Probably owing to the great reduction in nesting numbers this year at Ainsdale Freshfield, due to drier dune slacks, a pair nested on the marsh at the West Derby Sewage Farm inside Liverpool city bounds, and a number on the marsh on the Walton Sewage Farm, adjoining. The eggs of the former were taken, despite our best efforts, probably by workmen on alterations at the farm ; Mr. W. French, of the Liverpool Naturalists' Field Club, reported to me young birds out of the nest on the Walton Sewage Farm marsh.

Lesser Black-backed Gull.—One ringed Walney as young bird, June 9th, 1935, found dead in ventilator of National Bank, Water Street, Liverpool, October 18th, 1935.

Greater Black-backed Gull.—I watched an immature on the lake at Botanic Park, Liverpool; a rare gull inside the city.

Arctic Skua.—Mr. W. Wilson (L.N.F.C.) reported to me one from West Kirby, August 25th. I saw one on Ainsdale tide line, February 23rd.

Jack-snipe.—Keeper reported first of season from Liverpool Sewage Farm, August 24th; rather early.

Sandpipers.—Three pairs nested in Knowsley Park—two at an island in White Man's Dam and one at the Mizzy Lake. They do not seem to have been mentioned from the park before, though they are here annually. A pair nested on marsh at Walton Sewage Farm, and another summered at West Derby Sewage Farm.

Dunlin, Ringed Plover, Grey Plover, Bar-tailed Godwits.—Frequently on migration at Liverpool Sewage Farm.

Ruff.—Passage at Liverpool Sewage Farm not nearly so marked as late 1934. I saw two February 16th, but gale made observation difficult : two males were there April 13th. Mr. Smith, the official in charge, to whom I have pointed out the species, reported one on August 27th, and I saw two on August 31st ; one bird I could not get near enough to be certain of was there September 7th, but the superintendent had seen two in the morning. None were seen after this.

Curlew Sandpiper.—Mr. W. French (L.N.F.C.) reported to me two at Liverpool Sewage Farm, August 31st ; one September 27th also ; one Ainsdale shore, November.

Green Sandpiper.—I watched one with a party of L.N.F.C. at Liverpool Sewage Farm, September 7th. Another, or same, September 12th.

Black-tailed Godwit.—Mr. W. Wilson (L.N.F.C.) reported one to me from West Kirby on August 11th.

Grey Phalarope.—Mr. W. French (L.N.F.C.) reported one to me from Liverpool Sewage Farm, September 25th and again on September 27th ; Mr. W. Wilson reported one to me from West Kirby, September 28th ; at the same time I had reports from Thurstaston on Dee shore, but was unable to verify; over half a dozen Deeside reports in all were sent me.

Whimbrel.—One, Liverpool Sewage Farm, August 24th. They are annual visitors.

Curlew.—Odd pairs nest on Kirkby Moss and have done for some years. This is their most south-west nesting place in Lancashire, just on the edge of Liverpool. Before draining, red grouse nested on this Moss and there are numerous records of gulls nesting in the past.

Pheasant.—A fine, almost all white cock has been in Knowsley Park three years now. Of 1935 hatchings, I found part albinos at Kirkby and at Walton Sewage Farm.

Buzzard.—One reported by an unknown correspondent from Barnston, January 6th. While in the train with a member of the Liverpool Naturalists' Field Club on October 12th, we watched through glasses from Meols station (Cheshire) a buzzard soaring over that part of Wirral, and made certain it was no gull. I now recall in a very busy period of February, 1934, when I was unable to keep my diary to date, watching a buzzard soaring very high over the

saltmarsh and Mersey just below Hale, near Widnes. I watched it for some time through glasses.

BITTERN.—The boathouse keeper at Knowsley Park told me he watched one for some days at the lake in 1927.

PINK-FOOTED GOOSE.—One on Knowsley Park Lake throughout April. I first saw it April 6th and drew the attention of the lake keeper to it on the 13th, and he agreed with me it was a wild bird, and had not been put out. It mostly kept apart from the rest of the wildfowl and could not be approached nearer than over 100 yards. We thought it was partly winged somewhere in the winter shooting season and had sought seclusion here, for it seemed only able to fly low over the water. From time to time I have set up grey geese in small parties from the lake in winter, but they have not stayed so long before.

HEN-HARRIER.—In January, Lord Sefton's game-keeper at Kirkby Moss told me the men had met with a harrier while rabbiting, and his description and reply to my questions most fitted this species.

MERLIN.—I watched one stooping at starlings frequently in the afternoon of February 2nd, 1935, in Croxteth Park, near Liverpool.

POCHARD.—A drake summered on Meols Pond, Wirral, but did not nest. I recorded a pair nesting at Knowsley Park, 1933. The boathouse keeper, who knows the duck well from the duck shoots, told me he found a nest at the same place in 1932.

TUFTED-DUCK.—A great increase at Knowsley Park, where more tufted than wild mallard now nest. I found 14 pairs nesting on the White Man's Dam and Mizzy Dam in 1935.

SCAUP.—A flock inland at Sefton Meadows in February.

GOLDENEYE.—On Knowsley Park Lake, November 9th.

SCOTER.—I watched a drake bathing in the flooded meadows at Sefton (inland), December 7th.

STORM PETREL.—Mr. W. Wilson reported to me one found by boathouse official on West Kirby, Dee shore, September 8th ; one found alive stable yard, Croxteth Hall, December 6th, identified by Mr. W. French, L.N.F.C.

GREAT-CRESTED GREBE.—Three pairs now nest annually in Knowsley Park, not two as recorded in the national survey by Messrs. Hollom, etc. Two pairs I found nesting on the White Man's Dam as usual, and one pair on the Mizzy Dam in the Prescot side of the Park. The boathouse keeper told me they had been on the Mizzy Lake before.

BRITISH TRUST FOR ORNITHOLOGY

On January 17th, 1936, the Prime Minister, the Archbishop of Canterbury, the Chancellor and Vice Chancellor of Oxford University, and others launched a Viscount Grey Memorial Appeal, one of whose objects is to develop 'the existing scheme of research maintained by the British Trust for Ornithology at Oxford . . . . and to form a permanent institute of bird studies to which his name will be attached.'

For the 1936 season the following investigations are being initiated by the British Trust for Ornithology.

1. Food of the Little Owl

In spite of all the work already done on this subject sufficient doubt still remains to give rise to continued controversy. The Trust has, therefore, been requested to promote a comprehensive inquiry during 1936 in the hope of settling the persistent conflict of evidence regarding the character of the little owl. To what extent, for instance, does it kill other birds and how far does it show individual or local variation in diet? Experiments carried out at the Zoo show that the cast-up pellets of the little owl give an entirely satisfactory record of what it has eaten, and observers are, therefore, being asked to find, collect, and send in, with certain essential particulars, as many little owl pellets as possible. In order to avoid waste of effort collaboration is being arranged between those who have already worked on this subject, and Miss A. Hibbert-Ware, who has considerable experience of it, has agreed to analyse pellets for the committee which is to report conclusions. Copies of questionnaire can be obtained from the Editors of *The Naturalist*, The University, Leeds, 2. If enough observers will send in pellets it should be possible to dispose of this long unsettled question. Address: Miss A. Hibbert-Ware, Hilary, Girton, Cambridge.

2. Tameness in Wild Birds

It is well known that certain birds become very tame and approachable in a wild state, while others stay shy, but this subject, although of the greatest importance both to bird psychology and to bird protection, remains to be properly investigated. The Trust is, therefore, asking bird-watchers to keep and send in records of any *wild* birds which will take food from the hand, enter an inhabited dwelling, allow of unusually close approach and so forth. First of all we want to find out which species most frequently become tame, to what extent, and in what conditions.

3. Bud-eating by Wild Birds

Complaints are frequently heard of buds of trees and plants being eaten by wild birds, but very little is definitely known about this habit. We do not, for instance, know which species of birds are most often responsible, and why they do it—in many cases the buds are destroyed without being eaten. The present inquiry, which particularly concerns observers who have large gardens or orchards, is intended to throw some light both on the economic and the psychological aspects of this curious habit.

4. Woodland Birds

Certain birds are known to be closely attached to woodlands, and many of these have definite preferences either for deciduous or coniferous

woods, for woods of a certain age, such as young plantations, or of a special character, such as woods with plenty of undergrowth. Such special preferences are in many cases imperfectly known. Preliminary study suggests that they are more frequent and more easily traceable than is often supposed, and the object of this inquiry is to enlist a small number of qualified observers in the effort to find out more about them. This involves visiting the well-marked types of wood in a district and recording the individuals of each species found on a slow walk through the wood, both in mid-winter and in the breeding season. It does not involve detailed census work. Observers interested should communicate with David Lack, The School, Dartington Hall, Totnes, S. Devon.

5. Distribution and Habitat of the Little Owl, Lesser Redpoll, and Grey Wagtail

Several regional and local bird societies have for some years invited their members to concentrate on finding out about the local distribution of a few particularly interesting species, freshly chosen each season. As this practice spread it became obviously desirable that the species observed should, so far as possible, be the same in any given year in all areas where this work was attempted. The Trust was asked to select species for the purpose, and the three selected for 1936 are the little owl, lesser redpoll, and grey wagtail. No census of any of these birds is being undertaken, but members of several societies are collaborating in finding out in their own areas the local distribution of these three birds and the exact types of habitat which they favour. Trust members who are not sure if their district is covered by a society should ask W. B. Alexander, M.A., University Museum, Oxford.

6. Heron Inquiry

The sample Census of Heronries is being carried on annually by more than fifty observers. As already announced, in 1935 for England and Wales as a whole, herons were back at about the level of 1928—that is approximately 4,000 breeding pairs. No more volunteers are needed for England and Wales, but Scottish observers who are prepared to take an annual count of occupied nests at one or more heronries are asked to communicate with W. B. Alexander, M.A., University Museum, Oxford.

7

Any suggestions, criticisms, or support will be welcomed. Correspondence dealing with the field work should go, unless otherwise stated, to W. B. Alexander, M.A., University Museum, Oxford. All subscriptions and financial correspondence should be sent to B. W. Tucker, M.A. (Honorary Treasurer), University Museum, Oxford. General correspondence relating to the Trust should be addressed to E. M. Nicholson (Honorary Secretary), 61 Marsham Street, London, S.W.1. A report on the progress of all inquiries will be issued in the Spring.

NEWS FROM THE MAGAZINES

Science Progress (Vol. XXX, No. 119, January, 1936) includes the following articles : 'Sound and Noise,' by G. W. C. Kaye ; 'The Early History of Phosphorus,' by J. R. Partington ; 'Some Aspects of the Plant Virus Problem,' by C. E. Marshall ; 'The Biological Decomposition of Lignin,' by A. G. Norman, and 'Synthetic Anti-Malarials.' There are notes on Recent Advances in Science, three Essay Reviews, and over 40 pages of Reviews and Book Notices.

The Naturalist

NOTES ON SEEDS AND SEEDLINGS

W. E. L. WATTAM.

Mountain Ash (Pyrus aucuparia Gaertn.).

While not quite up to the standard of fruitage yield as in the season 1934, that of 1935 was still quite excellent despite the second successive year of drought conditions prevalent from early Spring to late Summer. I thought it would prove interesting to test the seed fertility of the ripened fruits of this tree. In late September, during a walk through the Meltham Valley, I made a selected gathering of racemes of fruit and chose therefrom 240 of the soundest-looking fruits. I soaked these fruits in water for 48 hours, and the cleansing away of the mesocarp produced the following results :—

102 produced an apparently sound cartilaginous endocarp.

138 contained only blackish-brown endocarpal remains.

I soaked the 102 apparently-sound endocarps in water for 48 hours, and then dissected each one for seed contents with the following results :—

Four yielded 4 seeds each, 49, 2 seeds each, a total of 114 seeds from 53 sound endocarps. The remaining 49 endocarps, although sound looking, proved to have the inner contents quite decayed. After drying, the seeds assumed a rich yellowish-brown colour. They averaged 5 m.m. in length, and about 3 m.m. in breadth across the centre of the seed. One end is broadly blunt, the other end tapering to a fine rounded point.

Houseleek (Sempervivum tectorum L.).

In the early part of July, 1935, one of the many plants in my miniature rock-garden interested me still further by producing a cyme $8\frac{1}{2}$ in. in length of 28 dull red-purple flowers. Observations upon the fertilisation of these flowers seemed to prove that this was effected by the small beetle *Bembidium littorale*. Only 20 of the flowers produced seed follicles, the remaining 8 upper flowers of the cyme becoming abortive. I cut the cyme at the beginning of September, and after drying for 7 days extracted the seeds, the yield being about 200. The seeds are club-shaped, very small, averaging about 2 m.m. in length, and are of a deep bluish-black in colour. The plant which produced this flower cyme subsequently withered away.

Heath Bedstraw (Galium saxatile L.).

This not uncommon plant of our local heaths, dry banks, and sub-soiled sand shaley rough pastures, with their decayed gramineous growths, has provided instruction and interest in watching its development from the seedling stage, and given insight as to why it so soon dominates the areas in which it loves to luxuriate. Forty fruits were gathered in August,

1934, and it was then noted that they are not freely produced despite the large masses of blossom which make this plant so prominent during its flowering period. The fruits are rough and minute. I procured soil from the top cover of a shaley sandstone embankment, with an admixture of decayed *Agrostis vulgaris*, and this was deposited in a part of my garden facing due north, from which the ordinary garden soil had been entirely removed. The 40 fruits were broadcast on this soil on the 1st April, 1935. The first 4 seedlings appeared on the 20th April, and between the 1st April and the 5th May, 1935, 22 seedlings made their appearance. Germination appeared to have ceased, but after the heavy rainfall of October 3 more seedlings made their appearance during the latter part of that month. During the whole period of time which is covered by these notes no artificial aids, either by water or manures, was given to the plants to entice growth. The cotyledons are extremely small and obovate. The root system is very vigorous and fibrous. On the 31st October 1935, the average tap root was $4\frac{1}{2}$ in. in length, and root branches measured up to $10\frac{1}{2}$ in. in length. All were of a yellowish brown in colour. At the beginning of July the plants were reduced to 12 in number, and these were permitted to grow until the 31st October, when 7 were dug up. The first two stems soon assume a decumbent growth, and their axillary growths throughout assume a similar mode of growth, the slight uprising which does occur in their continued growth being due to more dense and overlapping subsidiary growths. One of the seedling plants had produced 7 main branches, and the subsidiary branching growths of such main stems totalled 144, the largest branches averaging $6\frac{1}{2}$ to 9 in. in length. The internodes are very short, and the linear ovate leaves were very freely produced. Another plant which had developed extremely well proved to have a main stem slightly over $\frac{1}{4}$ in. in height and $\frac{3}{4}$ in. in thickness. It had given rise to a main and subsidiary branching system totalling 203 large and small branches, all of excellent growth. The space covered by this single seedling plant, 168 days old, was 10 in. by 13 in. A group of 3 other seedlings, which had sprung close together, were, at the end of 168 days, so closely intermingled that their growths covered a space of 17 in. by 18 in., and the space covered by this self same group on the 28th December, 1935 (231 days old), was 20 in. by 21 in. The seedlings withstood the severity of the extraordinary wintry spell from the 8th to the 23rd May, 1935, and also the sun-drenching conditions from June to August, during which period the ratio of growth was slow, but growth increased very rapidly after the heavy rainfall of late September and October.

NEW AND RARE YORKSHIRE FUNGI

T. PETCH

THE following list includes several species which were collected on the fungus forays of the Mycological Committee of the Yorkshire Naturalists' Union, and others which have been kindly sent me by members of the Committee during the last year.

Nectria coryli Fuckel, on hazel, Rokeby, September 17th, 1933. In this specimen, the perithecia are accompanied by a white conidial stroma, which bears at first oval, or oblong oval, hyaline continuous conidia, $4-6\times2-2{\cdot}5\mu$, and subsequently cylindrical, one-septate, hyaline conidia, $14-25\times3\mu$, on penicillately branched conidiophores. Pending culture experiments, it is not certain whether these belong to the *Nectria*. *Nectria coryli* was previously confused in this country with *N. cucurbitula*, a species which occurs only on conifers. Berkeley's '*N. cucurbitula*' on ash is *N. coryli* (specimen now in Herb. Kew), and so is Currey's '*N. cucurbitula*' in *Trans. Linn. Soc.*, XXII (1858), p. 282, pl. 49, fig. 178. On the other hand, '*N. cucurbitula*,' Mulgrave Woods (Y.N.U. Fungus Foray, 1908), is *N. cinnabarina* (specimen in Herb. Kew).

Lasionectria flavida (Corda) Cooke. Specimens of this species were kindly sent me by Mr. W. G. Bramley, on decayed wood of beech, Nun Appleton, April 14th, 1935. What Corda's fungus really was is uncertain, but I take it in the sense of Berkeley and Broome, which fits Corda's figure and description better than any other which has been proposed. Four other British collections of this species are known, two by Broome in Somerset in 1847 and 1869 respectively; one by Massee at Scarborough; and another by Mr. E. J. H. Corner at Missenden in 1925. Massee's specimen is now in Herb. British Museum. Massee worked at the British Museum for a short period before proceeding to Kew, and Yorkshire mycologists will be interested to know that he left there a collection of fungi which includes several on which his Scarborough records were based.

Hypomyces aurantius (Pers.) Tul. Although this is not a new record for Yorkshire, I include it because of an interesting coincidence. Mr. Bramley sent me specimens of *Hypomyces aurantius* on *Polyporus squamosus*, collected at Nun Appleton, April 14th, 1935; and on receipt of my identification he forwarded me other specimens, collected the previous year on the same host. The latter, however, proved to be *Nectria peziza* (Tode) Fries. Going back a hundred years, we find that Greville described a species as *Sphæria aurea* on *Polyporus squamosus* in 1823. His species was subsequently determined as *Hypomyces aurantius*, but Cooke, after examining one of

Greville's specimens, insisted that it was a *Nectria*, which he described as *N. aurea*. Cooke's species is *N. peziza*. Thus it is clear that Greville's gathering included two species, the same as those recently collected on the same host. *N. peziza* was collected on *Polyporus squamosus* at Helmsley, August, 1935. The two specimens of *Dialonectria aurea* recorded in the *Fungus Flora of Yorkshire*, from Masham and Mulgrave respectively, are *N. peziza* (specimens in Herb. Kew).

Sphæroderma fusisporum Petch, n. sp. Mr. W. P. Winter kindly forwarded me a specimen of *Spicaria* (*Isaria*) *farinosa* on a pupa, collected in Hirst Wood, Saltaire, in September, 1935. It was noticed that the *Isaria* bore minute orange-coloured points, and on examination these proved to be the perithecia of a *Sphæroderma*. The perithecia also occur on the pupa, which is, of course, permeated by the mycelium of the *Isaria*. They are globose, orange at first, but appearing black from the apex downwards as the spores mature. At first they are astomate, but develop a papillate ostiolum, and subsequently a collar (the upturned edge of the perithecial wall) round the orifice, but no setæ. It was at first thought that it might be *Sphæroderma hypomyces* v. Höhnel, but an examination of a specimen of the latter in Herb. Kew from von Höhnel showed that its spores are quite different.

Sphæroderma fusisporum Petch, n. sp.—*Peritheciis sparsis, superficialibus, aurantiacis, globosis, usque* 0·3 *mm. diam., primum clausis, dein ostiolo papillato poro margine elevato pertuso, glabris vel hyphis sparsis adpressis vestitis ; pariete flavo, cellulis magnis ; ascis clavatis,* 66×12*μ, sporis octonis, oblique uniseriatis vel biseriatis ; sporis lanceolatis, fuligineis, obtusis vel truncatis, continuis, gutta magna centrali,* 20—24×6—9*μ*. On *Spicaria* (*Isaria*) *farinosa*, England.

Rosellinia callosa Wint. On poplar, Grimston, near Tadcaster, April 28th, 1935, collected by Mr. W. G. Bramley ; identified by Mr. E. W. Mason, Imperial Mycological Institute. Perithecia crowded, globose, up to 1 mm. diameter, black, with a greyish bloom at first, verrucose ; ascospores dark brown, narrow oval or irregularly cymbiform, without any appendage, 21—24×7—9*μ*, occasionally 28×9*μ*. This is the first record of this species for Great Britain.

Entomophthora planchoniana Cornu. Thaxter, in his *Entomophthoreæ of the United States*, adopted this name for an American species ' with considerable hesitation,' pointing out the details in which the latter seemed to differ from Cornu's description, and the difficulty of interpreting Cornu's account. Last year (1935), I gathered a species on Aphis at North Wootton in some abundance, which appears to agree much better with Cornu's description. I have also

had the same species from America, and collected a single example in Deepdale, Barnard Castle, September, 1933. The latter was recorded as *Empusa muscæ*. As Cornu stated, his species resembles *E. muscæ* in some respects. In a note which I expect will appear elsewhere in the near future, I propose to adopt the name *E. planchoniana* (Cornu) for this species, and to rename Thaxter's American species *E. thaxteriana*. We shall then have the Yorkshire records, *E. planchoniana*, Deepdale, Barnard Castle; and *E. thaxteriana*, Hornsea and Aldbrough, East Yorks., and Deepdale, Barnard Castle. Cornu described the spore of his species as being the shape of a 'toupie d' Allemagne,' *i.e.* a humming top. Actually, it is the shape of the old German spiked helmet. I should be glad if any reader could furnish me with information concerning the shape of a French humming top about the year 1873.

Oospora trichiæ Petch, n. sp. This white 'mould' was found on *Trichia verrucosa*, Hagg Wood, Burnsall, Yorks., September 15th, 1931. The mycelium is white, lax and and woolly, composed of hyaline hyphæ, 1—1·5μ diameter. The conidiophores are up to 50μ high, sometimes with one lateral branch, and bear narrow oval, or subcylindrical, hyaline conidia, 3—5×1μ.

Oospora trichiæ Petch, n. sp. *Mycelio albo, laxo, floccoso; conidiophoris* 1—1·5μ *diam., usque* 50μ *alt., interdum uno ramo laterali; conidiis anguste ovalibus vel subcylindraceis, hyalinis,* 3—5×1μ. On *Trichia verrucosa*, England.

Chalara fusidioides Corda. On *Nectria coccinea* on sycamore and on the surrounding sycamore bark, Duncombe Park, Helmsley, August 31st, 1935. Conidiophores white in mass, hyaline by transmitted light, clustered, up to 40μ high, with an oval base, 9μ high, 4μ diameter, passing into a cylindrical tube, 2μ diameter, of varying length; conidia cylindrical, truncate, hyaline, 4—6×2μ, extruded from the apex of the conidiophore and persistent in long chains. In these specimens, the base is not so abruptly attenuated above as in Corda's figure. The fungus is an *Endo-chalara*.

Spicaria simplex Petch, n. sp. This species occurred on *Trichia affinis*, Duncombe Park, Helmsley, August 31st, 1935. The conidiophores are white in mass, hyaline, clustered, up to 130μ high, 2μ diameter, bearing phialides in whorls directly on the main stem, or occasionally clustered at the apex of a short lateral branch. The phialides are flask-shaped, rather abruptly attenuated at half their height, 11—15×1·5—2μ, and the conidia are oval, 2·5—3×1·5—2μ, or globose, 2—3μ diameter, hyaline, in apical chains. *Spicaria penicillata* v. Höhnel, which has been found in Norfolk on *Stemonitis*, has a different conidiophore and much larger

conidia. *Spicaria perpusilla* Speg., found on *Hemitrichia clavata* in Argentina, has a different conidiophore, and conidia up to 20μ long.

Spicaria simplex Petch, n. sp. *Conidiophoris hyalinis, fasciculatis, usque* 130μ *alt.*, 2μ *diam.*; *phialidibus axi verticillatis, rarius apice rami lateralis brevis, ampullaceis, a medio abrupte attenuatis,* 11—15×1·5—2μ; *conidiis ovalibus,* 2·5—3×1·5—2μ, *vel globosis,* 2—3μ *diam., hyalinis, catenulatis.* On *Trichia affinis,* England.

Fusarium avenaceum (Fr.) Sacc. On an Aphis, Burnsall, Yorks, September 13th, 1931 (det. Reinking and Wollenweber).

Hirsutella aphidis Petch, n. sp. I collected this species on an Aphis at Aldbrough, East Yorks., September 12th, 1933. The host bore a sparse covering of mycelium over the body, with denser tufts arising from the joints of the legs. There is no clava, the conidiophores being lateral on the hyphæ, up to 55μ high, with a conical base, about 20μ high, 3μ diameter, gradually attenuated into a long sterigma. The spore cluster is lemon-shaped, 10×5—6μ, the individual conidia being cymbiform or oval, ends obtuse, hyaline, continuous, 6—10×1·5—2μ.

Hirsutella aphidis Petch, n. sp. *Mycelio hyalino in corpore sparso, articulis crurum floccoso; conidiophoris lateralibus, usque* 55μ *alt., basi conico, circa* 20μ *alt.,* 3μ *diam., in sterigmate longo sensim attenuato; globulis sporarum limoniformibus,* 10×5—6μ; *conidiis cymbiformibus vel ovalibus, obtusis, hyalinis, continuis,* 6—10×1·5—2μ. On Aphis, England.

FROM A MICROSCOPIST'S NOTE BOOK

W. LAWRENCE SCHROEDER, M.A.

SOME years ago, in late November, I took from a farm trough in the Shibden Valley, some tufts of *Cladophora glomerata*. On the filaments was an amazing abundance of algal life; diatom clusters of *Synedra ulna*, and of *Rhoicosphenia curvata*; and a great number of *Characium Pringsheimii*, of the Chlorococcales group. These last were in all stages of development, newly settled zoogonidia, active zoogonidia, and plants in process of division into zoogonidia. One of these latter, at c. 10–5 a.m., showed a slight sliding movement of the enclosed eight elongated zoogonidia.

I kept the plant under observation for about thirty-five minutes; at the end of which time the movement of the zoogonidia gradually increased. The activity caused the cell-wall to expand, until finally the outline was almost lost; only the top of the cell showed faintly. The zoogonidia swam about in the enlarged case, as if testing the cell-wall for a way out. At about 10-45 a.m. the side of the cell

burst—or rather faded into nothingness, and the eight inmates made their way into a wider watery world. I wondered what they thought of their freshly experienced surroundings.

I had under observation an infusorium, that lives a somewhat sheltered life, in an urn-like case—*Cothurnia imberbis*, one of the Vorticellidinæ. The contractile vacuole, just under the protruding lower rim carrying the cilia, was in excellent working order, closing very rapidly with a sort of spasm, and opening very slowly, as gradually it filled with the fluid to be excreted. The entire process was repeated every two minutes, for quite a considerable time.

The number of knobbed rays on *Sphaerophyra*, one of the sun-like Protozoa, varies, within my observation, from seven to fourteen. In one creature, with nine tentacles, five were bent over in the act of conveying food material to the body-surface. Another, with seven rays, had five contractile vacuoles just under the outer surface of the sphere.

In Memoriam

Miss E. M. PILKINGTON

Once again the Y.N.U. has to mourn the loss of an old and respected member, this time in the person of Miss E. M. Pilkington, of Leeds, who passed away on January 2nd at the St. James' Hospital, Leeds.

Miss Pilkington was for many years a member of the Yorkshire Naturalists' Union, and although recently her health had debarred her from regular attendance, nothing seemed to give her greater pleasure than participation in our field meetings. Her own special interest was in plant galls and the agencies causing them, as is testified by her numerous reports published in the pages of *The Naturalist*.

For many years she acted as convener of the Plant Galls Committee, and as the representative of the Entomological Section on the Executive of the Y.N.U. Her genial personality and stimulating enthusiasm will be very greatly missed by her many friends in the Union.

She was also an active member of the Leeds Naturalists' Club, and as a token of her interest in its work, her books on Galls and other natural history subjects were left to this Society.

Miss Pilkington came of an old Lancashire family, and was the only daughter of the late Rev. J. M. Pilkington, of Selby. In addition to her interest in natural history, she was for many years an active worker in connection with the Mill Hill Unitarian Chapel, Leeds.

By her own wish she was cremated, and her ashes were scattered at Lawnwood, a district in which she passed many happy hours.—J.M.B.

1936 Mar. 1

DERBYSHIRE STONEFLIES

JAMES M. BROWN, B.Sc., F.L.S., F.R.E.S.

STONEFLIES seem to have received very little attention from entomologists working in Derbyshire, and few records of captures appear to have been published. In the Victoria County History of Derby a short list of twelve species occurs, mainly referable to the southern part of the county, and especially to the River Dove. My own collecting has been chiefly confined to the north-east of the county, and I can now give a list of twenty-five species out of a total of thirty-three known for Britain.

As Stoneflies pass the early stages of their life-history in running water, the collecting grounds are all in the neighbourhood of streams, either large or small, and my localities in the accompanying list are associated with the following streams :

Ryecroft Glen : Limb Brook (which flows into the River Sheaf near Dore Station).

Cordwell : Barlow Brook (which with the River Dron, enters the River Rother at Chesterfield).

Blacka Moor : Totley Brook (a small tributary of the River Sheaf, entering it near Dore Station).

Padley Wood : Burbage Brook (entering the River Derwent near Grindleford).

Longshaw : a small side stream running into Burbage Brook.

Hathersage, Grindleford, and Baslow : River Derwent.

Lathkill Dale : River Lathkill (entering the River Bradford at Alport).

Bretton Clough : Highlow Brook (flowing into the River Derwent near Hathersage).

Bradford Dale : River Bradford (a tributary of the River Wye, entering it south of Haddon Hall).

Monsal Dale, Ashford, Bakewell : River Wye.

In the list that follows, V.H. refers to the Victoria History of Derby, and all records not assigned are my own.

LIST OF SPECIES

PLECOPTERA

1. *Perlodes mortoni* Klap.
   Dove Dale (E. Brown.) V.H.
   Longshaw. Totley Brook. Bretton Clough.
   This species appear to be rather local, and to have a short imaginal period. Found only in May, as adults.

2. *Perla cephalotes* Curt.
   Mappleton (River Dove), (A. E. Eaton.) V.H.
   Bretton Clough, Bradford Dale, Longshaw.
   Fairly common about swift streams. The fly appears in May and June.

3. *P. carlukiana* Klap.
Bretton Clough (n.). Blacka Moor (n.).
Much more local than the preceding species, and nymphs are more easily obtained than adults. I have not yet come across the fly in any of these stations.

4. *P. marginata* Panz.
Mappleton (River Dove), (A. E. Eaton.) V.H.
Dove Dale (G. Pullen). V.H.
There may be some doubt regarding this identification, the species being very rare in this country, but believed to occur in the Lake District.

5. *Chloroperla grammatica* Poda.
Mappleton (River Dove), (A. E. Eaton.) V.H.
Near Derby (G. Pullen). V.H.
Troway, Cordwell, Totley, Blacka Moor, Hathersage, Bretton Clough, Monsal Dale, Bakewell, Lathkill Dale.
A widely dispersed and plentiful species. The fly occurs from April to July, and probably later.

6. *Isopteryx tripunctata* Scop.
Generally distributed (A. E. Eaton). V.H.
Cordwell, Bretton Clough, Hathersage.
The fly is about during May.

7. *I. torrentium* Pict.
Cordwell, Blacka Moor, Padley Wood, Longshaw, Hathersage.
This species seems to me to be more common than the last. I have records of the fly from May to August.

8. *Capnia nigra* Pict.
Cordwell, Ryecroft Glen.
So far as I have determined, this species is distinctly rare. The fly is out very early, my times being from January to March.

9. *C. vidua* Klap.
Padley Woods.
This very local species occurs about this stream in large numbers, but I have taken it nowhere else in the county. The fly emerges very early in the year, and I have records dating from February to the beginning of May (this last being an exceptionally late record for the fly).

10. *Taeniopteryx risi* Mort.
Ashbourne (A. E. Eaton). V.H.
Blacka Moor, Bretton Clough, Padley Woods.
The adult is on the wing from June to July.

11. *Nephelopteryx nebulosa* L.
Trent (A. E. Eaton). V.H.
Padley Woods.
This species seems to be extremely local, and early in its emergence. I have taken one specimen only from this stream, and that in March.

12. *Leuctra geniculata* Steph.
Mappleton (River Dove), (A. E. Eaton). V.H.
Ashbourne (A. E. Eaton). V.H.
Dove Dale, Bakewell.
Flies are about during August.

13. *L. fusciventris* Steph. (*klapaleki* Kmpy).
Cordwell, Padley Woods, Grindleford, Hathersage, Bradford Dale, Lathkill Dale, Monsal Dale, Bakewell, Dove Dale.
This is probably one of our commonest and most widely distributed species, and occurs from May to November.

14. *L. hippopus* Kmpy.
Cordwell, Ryecroft Glen, Padley Woods, Bretton Clough, Stanage, Monsal Dale.
This is a widely dispersed species and the fly is out from February to July.

15. *L. inermis* Kmpy.
Blacka Moor, Longshaw, Padley Woods, Bretton Clough, Bradford Dale.
The adult occurs from April to July.

16. *L. nigra* Pict.
Totley Brook, Blacka Moor, Cordwell, Padley Woods, Bretton Clough, Baslow.
The fly of this small species is about from May to July.

17. *Protonemoura precox* Mort.
Ryecroft Glen, Blacka Moor, Padley Woods, Bretton Clough, Hathersage.
This is a rather early species and occurs from March to April.

18. *P. meyeri* Pict.
Thorpe Cloud (A. E. Eaton). V.H.
River Dove (M. E. Mosely). E.M.M., 1932, p. 161
Ryecroft Glen, Totley Brook, Blacka Moor, Padley Woods, Bretton Clough, Baslow, Monsal Dale, Ashford, Bradford Dale.
This is a very plentiful and widely distributed species, and the fly occurs practically all the year round. I have records dating from January to November.

19. *Amphinemoura cinerea* Oliv.
Ashbourne (A. E. Eaton). V.H.
Cordwell, Totley Brook, Blacka Moor, Padley Woods, Hathersage, Monsal Dale, Lathkill Dale, Dove Dale.
The fly is about from May to September.

20. *A. standfussi* Ris.
Lathkill Dale.
This species appears to be particularly local, and not common. I have one record for the county, in August.

21. *Nemoura variegata* Oliv.
Ashbourne. V.H.
Padley Woods, Bradford Dale.
Flies were taken in April (an early record) and July.

22. *N. marginata* Pict.
Ryecroft Glen, Blacka Moor, Padley Woods.
Flies are about from March to October.

23. *N. cambrica* Steph.
Longshaw, Padley Woods, Bretton Clough, Bradford Dale.
All my records for the fly are for June.

24. *N. avicularis* Mort.
Longshaw, Lathkill Dale.
Flies were taken from June to August.

25. *Nemourella inconspicua* Pict.
Ashbourne. V.H.
Totley Brook, Blacka Moor, Padley Woods, Baslow, Monsal Dale, Bradford Dale, Lathkill Dale.
This is another common and not at all ' inconspicuous ' species, and appears to be widely distributed. The fly occurs from April to October.

THE IDA M. ROPER HERBARIUM

> "To the Botanical Department University of Leeds my Herbarium of British Plants and the cabinets to contain it, also as many of my botanical books as would be of value to the department free of legacy duty."

This bequest was anticipated in May, 1935, when Miss Roper expressed the wish that the herbarium should be sent to Leeds without further delay, informal arrangements having been made several years earlier. It was formally offered to and accepted by the University in May, although it was not delivered until a week after her death on June 8th.

As a Fellow of the Linnean Society, a contributing member of the British Botanical Exchange Club, a regular attendant at the Bryological Society's field meetings and Hon. Secretary of the Bristol Naturalists' Society whose active interest in the local flora was well known, Miss Roper had acquired an extensive knowledge of British plants ; Somerset and Gloucestershire were intensively worked for the local Society ; further afield she knew the rarities of the Channel Islands, Scotland, Ireland, Wales, Yorkshire, and the Broads, Fens, and Brecklands of East Anglia. The collection is a valued addition to the University herbarium, reflecting, as it does, long and earnest pursuit of field botany ; its ten thousand specimens include good series of such critical genera as Viola, Fumaria, Alchemilla, Rosa, etc., acquired partly by exchange. Correspondence with specialists and critical notes by referees preserved with the material discussed, exemplify the opinions of leaders of the period and add to its value for purposes of study ; there are photographs of local scenery showing details worthy of record such as the changes induced by *Spartina townsendii* in Poole Harbour. A few sheets perpetuate the memory of J. G. Baker, John Windsor, Boswell Syme, and others of the past and the initiated will appreciate *Holosteum umbellatum* gathered by Mary Marsham in St. Faith's Lane, Norwich, in 1849.—W. H. Burrell, University of Leeds Herbarium.

RECORDS

MIMULUS MOSCHATUS, DOUGL. AT FARNLEY

This plant has firmly established itself alongside the moist banks of the lowest of two natural reservoirs once used in connection with the demolished Farnley Mills, Farnley, near Huddersfield. On the 29th June, 1935, it was in brilliant flower forming a close association with *Epilobium hirsutum* L., *Myosotis palustris* With., *Montia fontana* L., *Stellaria uliginosa* L., and *Glyceria fluitans* Br. It was quite scentless. —W. E. L. Wattam, Newsome.

GLOSSY IBIS IN NEW ZEALAND

After a recent westerly storm in the Tasman Sea, a glossy ibis (*plegadis Talcinellus*) appeared at Foxton, New Zealand. This is the first of this species to be seen in New Zealand for seventeen years, for the bird's normal habitat is the Northern Hemisphere. A shore bird of the size of a bittern, the glossy ibis is dark chestnut with a glossy black back.

FRUITING AGE OF THE OAK (QUERCUS SESSILIFLORA SM.)

In April, 1914, I planted three acorns in the garden of my residence at Towngate, Newsome. All germinated, and one was selected to continue its growth. Flowers were first produced in 1929 and later seven fruits were gathered. In 1930 the tree again flowered freely and twenty-one fruits were noted. I left this residence in January, 1931, and the new owner of the property cut down this oak tree. In this case therefore the tree had attained the age of fifteen years before fruiting was attained.—W. E. L. WATTAM, Newsome.

YORKSHIRE HALIPLID RECORDS

Through the kindness of Mr. W. J. Fordham I have received a list of the existing Yorkshire Haliplid records. I find I can add *Haliplus nomax* B. Browne to this list. I took a single male specimen in the River Wharfe near Harewood (Yorkshire Mid-West V.C. 64) 10/6/32. It is doubtless widely distributed in the county in rivers and canals, and only requires searching for. I have also taken in the River Wharfe (near Middlefield)—not far from Harewood—*H. fluriatilis* Aubé., *H. wehnckei* Aerk., and *H. immaculatus* Aerk. These three species appear to be new to Yorkshire Mid-West. I have also taken *H. wehnckei* Aerk. in a stream near Bardsey, in the same vice-county. The very closely allied species of the ' ruficollis-group ' are not easy to identify with certainty; and if I can be of any assistance to Yorkshire coleopterists in their determination I should be very glad to give any help I can. Male specimens can always be identified with certainty ; but isolated females occasionally have to be given the ' benefit of the doubt.' !—THE REV. E. J. PEARCE, M.A., F.R.E.S., House of the Resurrection, Mirfield, Yorks.

CRAYFISH

The December (1935) *Naturalist* contains crayfish records for 1935. It might be of interest to add to this list another record. During the past year three crayfish have been brought to me, by my students, from Roundhay Park Lake, Leeds. Two were young immature specimens, the other was a large healthy female carrying eggs.—J. A. Butterfield, M.Sc., F.G.S.

COMMON LIZARD (LACERTA VIVIPARA)

On Friday, July 18th, 1935, one of my boys brought in a female of the Common Lizard. He had captured it in a field near Kirkstall Forge, Leeds. We placed it in the vivarium and left it over the week-end. On Monday morning when we arrived back at school it had laid ten eggs. Four of these were of a creamy yellow colour and infertile, the other six contained fully formed young lizards which could be easily seen through the transparent egg case. This is my second experience of the viviparous lizard laying eggs in captivity. I reported the first one in the *Bradford Scientific Journal* for July, 1911.

I was rather keen to keep a permanent record of this last batch of eggs and at nine o'clock on the Monday morning, with no sign whatever of movement within the eggs, I dropped one of them into 50 per cent. alcohol. The young lizard immediately whipped round inside the egg, slit open the wall, and emerged in full vigour. My first experiment not meeting with success I placed a wad of cotton wool, saturated with chloroform, into a second tube and placed in this a second egg. The result was the same. The remaining four eggs I left for observation. The first lizard emerged about two o'clock in the afternoon ; the remainder came out at intervals up to four o'clock. One of the small lizards was kept alive for a fortnight on green-fly, when it made its escape.

It has been suggested to me that the eggs were laid prematurely owing to fright, brought on by captivity, and that under normal conditions the young would have been delivered in the ordinary way. It is interesting to note, however, that in my 1911 experience I kept the lizard a month in a comfortable vivarium before the eggs were laid and in neither case did the lizard show signs of abnormal fear.—J. A. Butterfield, M.Sc., F.G.S.

GREY PHALAROPE IN WEST YORKSHIRE

The following unrecorded occurrence of the grey phalarope in the West Riding of Yorkshire may be of interest. Some years ago my attention was drawn to a stuffed bird in the office of Messrs. Hartley & Sons at the Gilroyd Mills, Morley. The bird was shot on their mill dam about 1840. I identified it as a grey phalarope. After reading Mr. Chislett's recent article in this journal I decided to borrow the specimen and to compare it with skins in the museum at the Manchester University. This I was able to do through the kindness of Mr. Tom Hartley. A comparison with the skins confirmed the original identification.—T. Henry B. Bedford, University of Manchester.

YORKSHIRE NATURALISTS UNION.

VERTEBRATE ZOOLOGY SECTION.

A MEETING of the Vertebrate Section of the Yorkshire Naturalists' Union was held in the library of the Church Institute, Leeds, on Saturday, February 15th. The Sectional Meeting was preceded by a meeting of the Yorkshire Wild Birds and Eggs Protection Acts Committee.

At the Sectional Meeting the Chair was taken by Alderman Hirst, J.P., and Mr. Rosse Butterfield exhibited the skin of an unusual variety of the Red Grouse.

Mr. W. R. Grist agreed to co-operate with the work of the British Trust for Ornithology by giving prominence in *The Naturalist*, to the proposed investigation of the habits of the Little Owl and by distributing questionnaires on request.

Mr. A. Snow read a paper entitled ' Exotic Fishes for the Home ' and exhibited a small warm-water aquarium containing a variety of growing water plants and a selection of tropical fish showing great beauty of form and colour.

The lecturer described the apparatus necessary to ensure the correct temperature and aeration of the water, the types of water plants to select and the methods of feeding the fish on dried foods with the occasional addition of daphne and chopped worms. He explained that the fish were little subject to disease, once they had been acclimatised and that the greater majority of species lived quietly together. There were exceptions however, such as the Siamese Fighting Fish, the males of this species fighting desperately. Many of the species described breed freely in captivity and once the correct balance between the plants and fish-life has been established an exotic aquarium requires little attention.

Captain H. M. Salmon, M.C., M.B.O.U., next gave an illustrated lecture, entitled ' Pembrokeshire and its Islands,'' and referred to the occurrence of the Grey Seal on the West Coast, South of Anglesey. They grow to a great size and vary greatly in colour from grey to brown, and jet-black examples are occasionally seen. Contrary to what is generally written, the Common Seal is not found on this part of the coast.

Of the birds, Ravens are numerous and increasing, which perhaps accounts for a recent tendency to nest in trees, flocks of 50 or 60 birds are not uncommon, and 13 were shown in one photograph.

The Carrion Crow and Magpie are also present and the latter frequently nests in low bushes. The Chough is not so plentiful as formerly but flocks of 20 to 25 are sometimes seen ; the lecturer attributed the decrease in their numbers to their frequently being caught in rabbit traps.

The Little Owl put in an appearance in 1924, and soon spread to the islands where it nests in holes. No less than 167 carcases of the Storm Petrel were taken from one burrow. The Short-eared Owl nests on the waste land bordering the coast, and the Peregrine Falcon is well distributed along the cliffs. A few pairs of Merlin nest among the Marram Grass on the sand dunes and both the Kestrel and the Buzzard nest in the cliffs. Occasionally the Montagu's Harrier breeds successfully in the boggy places, and the lecturer stated that Snipe always take wing when a Harrier is overhead and lie close when the Peregrine is hunting. A photograph showed one of the last of the Pembrokeshire Kites. The Heron breeds in several localities andafew pairs nest on the cliffs of Ramsey Island. Of the Ducks the lecturer showed photographs of the Shoveler, Wigeon and Teal and stated that the old duck decoy was now used exclusively for the ringing of ducks. The Cormorant and Shag nest fairly commonly in the area and the Gannet nests in great numbers on the Island of Grassholm, where there are literally two solid acres of birds. The Storm Petrel nests on Skokholm where there are probably 500 pairs, but because of their nocturnal habits they are rarely seen and the author had to resort to the flashlight in order to obtain photographs.

Manx Shearwaters are very plentiful and one bird incubates the egg

while the other goes 20 or 30 miles out to sea. Before dusk the wanderers return and gather in immense flocks before visiting the nesting burrows an hour or so after dark. Some time before dawn the exodus takes place and the birds scramble across the rough ground until they can gain a sufficient elevation to allow their taking wing ; this process was also illustrated by flashlight photographs. The Fulmar Petrel also occurs but has not been proved to nest, and all the divers may be seen off the coast in the winter months.

Other species described were the Turtle Dove, Oyster-catcher, and Puffin, the latter occurring in great numbers. Of the waders the Dunlin, Redshank, Curlew, and Sandpiper were shown, and the Gulls were represented by the Black-headed, Herring, Kittiwake, and the Lesser and Greater Black-backed. The Razorbill and Guillemot are also present.

Several photographs were shown of the Heligoland type of bird-trap, which had been constructed on one of the islands in order to catch wild birds and enable them to be ringed.

Finally a vote of thanks to the lecturers and the lanternists was proposed and carried unanimously. E. WILFRED TAYLOR

The Role of the Deserts, by **A. J. McInerny,** pp. 43, with 6 illustrations. (J. W. Bedford, 8 Bream's Buildings, London, E.C.4), 4/6. Mr. A. J. McInerny lays stress on the part the great deserts of the world have played in the development of the human race. He considers them areas of 'disinfection,' and that the pure air originating in them by being wafted over the neighbouring lands has produced there vigorous races of men, which have thence spread to other parts of the world. That a similar role is performed by the pure air of the oceans he does not suggest. To support his theory he shows the superiority of the races that surround the Sahara, and points out that the only empires and areas of civilisation in America have been close to the Mexican deserts and Peruvian deserts. Such facts seem to support his theory, as also perhaps may in less degree the great movements of virile peoples from near the central Asian desert. When, however, he comes to the Kalahari Desert in South Africa and the Australian Desert he considers the white colonies in those regions will have a great future, though nothing noteworthy has occurred near them in the past. He further suggests that extension of desert areas can only be beneficial. The author seems rather to assume that if he did not live on the borders of a desert the only alternative was for earliest man to have lived in jungles. It is obvious that if and when man came out of the jungle he would improve physically and mentally in better areas ; but there is no evidence that earliest man ever did live in jungles of his own free will. On the contrary where tribes are in such an environment at the present day it is only due to comparatively recent colonisation of the dense forest. He rightly stresses that the various forms of man are due to varying environments, and the healthiest climates such as those near tropical deserts are certainly good dwelling areas ; but such areas may occur at a distance from deserts, and to claim that the population of Europe owes much to the invigorating neighbourhood of the Sahara is extending the influences of that desert rather far, especially since a broad belt of sea intervenes. Mr. McInerny's theory of the origin of the brachycephalic as against dolichocephalic forms of man seems doubtful, though it must be admitted that there may be something in the geographical landscape of Central Asia to cause brachycephaly to develop there, dolichocephaly having developed in Europe and Africa. There are other details one may disagree with, and the small volume is rather confusing ; but whatever acceptance may be given to Mr. McInerny's theory, which needs expansion and clarifying in its presentation, the book is useful as affording a matter to think over and the theory is one not to be dismissed, but rather to be modified, as too much is based on it.—F.W.H.M.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-FOURTH ANNUAL REPORT
FOR 1935

(*Continued from page* 48)

Bryological Section (F. E. Milsom) : The past year may be described as one of quiet progress rather than of startling discoveries. The dry weather of the middle part of the year did not favour field work, especially in hepatics.

Among new vice-comital records the following may be noted :—

Tortula marginata Spruce. was found at Tanfield (V.C. 65), and its appearance in this district probably represents its most northerly limit in Europe.

Hypnum molluscum Hedw. var. *erectum* found near Alum Pot (V.C. 64). This is the extreme erect form of this polymorphic moss, and was first definitely identified in this country by a specimen found at Rosthwaite (V.C. 70) in 1933.

Among interesting finds other than new records may be mentioned :

Orthodontium gracile Schwaeg. var. *heterocarpum* Wats. found at Rievaulx and Allerthorpe. These are new stations in the north and east of Yorkshire.

Seligeria tristicha B. and S. found on Penyghent (V.C. 64) at about 2,000 ft. alt.

Orthothecium rufescens B. and S. confirmed in its old station in Heseltine Gill (V.C. 64), where it was growing in magnificent large tufts.

Mnium undulatum L. in abundant fruit in Bolton Woods (V.C. 64).

Trichostomum tortuosum Dixon in fruit near Alum Pot (V.C. 64).

Sphenolobus minutus (Crantz.) Steph. at Ingleton (V.C. 64).

Attention is drawn to the note on *Discelium nudum* Brid. in the report of the Langsett excursion. This moss, though widely distributed in the Millstone Grit areas, is sporadic in its appearance, and a study of its periodicity and the factors influencing it would form an interesting piece of research work for anyone favourably placed for observing the moss in the field.

Supplements have recently been published by the British Bryological Society to the Census Catalogues for Mosses and Hepatics. The numerous additions in vice-comital records indicate that considerable progress has been made in recording new localities for species. As stated last year, however, there is still plenty of room for more systematists in bryology.

Mycological Committee.—The Annual Meeting of the Committee was held in Helmsley from 31st August to 4th September, 1935. A very dry time preceding the meeting did not favour the collection of larger fungi, but many rusts and mildews were found. Miss D. Hilary, B.Sc., delivered her Presidential Address on ' Some Recent Additions to our Knowledge of Reproduction in the Fungi ' on Saturday evening, 31st August. Mr. T. Petch, B.A., B.Sc., spoke later on ' Melanospora,' this being the third of his series of contributions to the critical study of the Pyrenomycetes. A public lecture on ' Fungi of Farm and Garden,' by the Hon. Secretary, was also delivered in the Methodist schoolroom. Mr. A. A. Pearson, of London, was elected Chairman of the Committee for the ensuing year, but otherwise the constitution of the officers and members remains as before. The whole personnel of the Committee looks forward to the time when its Recorder, Mr. F. A. Mason, will have shed his illness and have returned to his wonted health and vigour.

During the year, Mr. A. Malins Smith, M.A., found a fungus on

Achillea ptarmica at Bentham. This was named *Schizothyrium ptarmicæ* Desm. by Mr. F. A. Mason, and proves to be a new record for V.C. 64. It has not, indeed, been recorded in Yorkshire since Massee's first collection at Seamer Moor, Scarborough.

Mr. W. G. Bramley writes : Uredines have not been as common as usual, except a few species. *Puccinia fusca* very scarce. *P. Lolii*, which in the last few years has been conspicuous on *L. perenne*, has also been scarce on that host but abundant on *Festuca gigantea*. Æcidia of *P. Circii-lanceoliti* Schrot. were found at Nun Appleton on 14th April, 1935, probably a first record for Yorkshire. The rust on *Antirrhinum* has also occurred at Bolton Percy devastating over wintered plants when in full flower. Specimens of *Rosellinia callosa* Winter determined by Mr. T. Petch and E. W. Mason are probably new to Britain and came from Grimston, Tadcaster on 28th April, 1935. *Calonectria flavida* (Lasionectria) det. T. Petch on dead Beech, Nun Appleton, on 14th April, 1935, has probably not been collected since Broome gathered it in 1847 and 1869. The record (*Fungus Flora of Yorkshire*, p. 369) is probably an error.

GEOLOGICAL SECTION

Coast Erosion.—A noteworthy result of erosion on the coast during the year has been a large fall of cliff at Keldhowe Stele, North-west of Sandsend. Dr. Hemingway reports that from the cliff here, which is 250 ft. high, thousands of tons have fallen. The fallen material includes boulder-clay, Estuarine sandstones and shales, Dogger (including a brown speckled sandstone 5 ft. thick, which is not accessible *in situ*), Alum Shales and Jet Rock series. The erosion was probably assisted by the effects of jet working at the cliff foot. The rocks at the base of the cliff were not affected. Among the fossils recorded in the fall, *Dactylioceras subcarinatum* and *Gresslya donaciformis* from a high horizon in the Cement Shales may be mentioned.

Mr. Stather reports that the normal erosion of the Holderness coast has continued but that there is nothing outstanding to report.

Temporary Section and Borings.—A number of sections exposed in building operations, new road construction and the laying of electric cables and water mains, have been watched. Dr. Versey reports that excavations made in connection with the re-building of the Queen's Hotel, in Leeds, revealed Coal Measure shales with ironstone nodules belonging to the measures underlying the Thick Stone. A further section revealing the position of the northern Boundary Fault of the Coalfield is reported from Scott Hall Road, Leeds.

The new road at Crambeck, near Malton, has shown a good continuous section in the Jurassic rocks. A full report of this section will be forthcoming elsewhere.

Dr. M. Black and Dr. J. E. Hemingway have carried out excavations on the upthrow side of the Peak Fault, at Ravenscar. These sections revealed that the Dogger represented by 4 ft. of beds in Peak Alum Quarry thins out altogether at the fault. From the Estuarine silts here resting directly on the Alum Shales fragments of leaves of *Baiera* and *Czekanowskia* were recorded.

It is hoped that all members of the Union will co-operate by giving notice to the convener of this Committee of any temporary section known to them.

Geological Photographs.—The convener has been active through the year in photographing sections in the East Riding. Similar work in other parts of the country is very desirable, especially in the case of

sections which are being rapidly covered. Dated photographs of areas suffering rapid change, such as the cliffs of the coast or river courses, may be extremely valuable in the future.

INCOME & EXPENDITURE ACCOUNT
October 1, 1935.

INCOME.

	£ s. d.	£ s. d.
Members' Annual Subscriptions, arrears	18 16 0	
1935	42 19 6	
1936	0 5 0	
		62 0 6
Levies from Affiliated Societies, arrears	4 11 9	
1935	7 7 6	
		11 19 3
Income from Investments—		
£200 4% Consols ...	6 4 0	
£170 16s. 9d. Conversion	7 13 8	
		13 17 8
Booth Fund £100 3½% Conversion		3 10 0
Cheeseman Fund £100 3½% War Loan		3 10 0
Bank Interest		0 1 9
Sundry Receipts—		
Discounts		4 14 4
Naturalist—		
Subscriptions, arrears	35 10 0	
1935	81 1 8	
1936	0 10 0	
		117 1 8
Balance of Expenditure over Income		3 1 8
		£219 16 10

EXPENDITURE.

	£ s. d.	£ s. d.
Expenses of Meetings—		
Secretary's Stationery ...	1 4 6	
Secretary's Cash Expenses	10 2 0	
Printing and Stationery General Account ...	47 4 11	
Rent of Rooms	0 11 6	
Treasurer's Stationery ...	3 13 9	
Treasurer's Postages ...	2 18 6	
Income Tax	4 1 0	
Wreath	1 0 0	
Grants—		
Public Meeting by Mycological Comm.	0 10 4	
Wild Birds' Protection Committee	0 10 6	
Bank Charges	0 10 10	
		72 7 10
Naturalist—		
Members' Copies ...	132 9 9	
Exchange Copies ...	5 12 6	
Binding	1 6 9	
Editors' Postages ...	8 0 0	
		147 9 0
		£219 16 10

BALANCE SHEET, October 1, 1935.

LIABILITIES.

	£ s. d.
Subscriptions paid in advance ...	0 15 0
Life Members' account...	323 8 0
Balance of Assets over Liabilities ...	194 17 3
	£519 0 3

S. D. P. FISHER,
Hon. Treasurer.

ASSETS.

	£ s. d.	£ s. d.
Cash at Bank		64 6 11
Cash in Hands of Treasurer		5 13 4
Cash in Hands of Editors		2 0 0
£200 4% Consols		222 0 0
£170 16s. 9d. 4½% Conversion ...		185 0 0
Subscriptions in arrear	£ s. d. 83 19 6	
Written off doubtful	43 19 6	
		40 0 0
Booth Fund £100 3½% Conversion ...		
Cheeseman Fund £100 3½% War Loan		
		£519 0 3

Audited and found correct,
October 21st, 1935.
W. D. HINCKS } *Hon. Auditors.*
JOHN R. DIBB }

The Entomologist's Record for January contains 'The oldest insect on record,' by H. Donisthorpe (a female of the ant *Stenamma westwoodi* taken in Ireland, which lived for 14 years and 12 days) ; 'Notes on the life-history of *Agrotis ipsilon* Rott. (*suffusa* Hb.),' by E. A. Cockayne ; 'Effects of temperature on the development of *Zerynthia rumina*,' by O. Querci ; several short notes on collecting, etc. ; and supplements, 'The British Noctuæ and their varieties,' by H. J. Turner, and 'Butterflies of the Upper Rhone Valley,' by R. Verity.

The Entomologist for February contains 'The mechanism and manner of action of the saw-fly terebræ,' by W. Keir ; 'Lepidoptera at Norwood,' by S. Wakely ; 'What is aberrational influence?' by G. B. Oliver ; 'Some African Osmiine bees,' by T. D. A. Cockerell ; 'Notes on Braconidæ : XV, Microgasterinæ,' by C. Morley ; and numerous notes and observations.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126 Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and the connected Sciences. | Rundschau für Geologie und verwandte Wissenschaften | Rassegna di Geologia e delle Scienze affini.

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators.

Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liége (Belgique).

Annual subscription price:

35 Belgas, sent to Mr. G. TIBAUX, 35 rue des Armuriers, LIÉGE, BELGIUM.
also through a bookseller.

BRITISH BIRDS

AN ILLUSTRATED MONTHLY MAGAZINE

Edited by H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., H.F.A.O.U.;
Assisted by Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., F.Z.S., and N. F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

A complete current History of British Birds

ARTICLES **NOTES**
CORRESPONDENCE **REVIEWS**

Beautifully illustrated with Photographic and other Plates

ANNUAL SUBSCRIPTION, 20/- POST FREE; MONTHLY, 1/9 NET.
Specimen Plates with List of Contents post free.

London: H. F. & G. WITHERBY, 326, High Holborn.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.
Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.
Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.Sc., F.R.S.E.; ANDERSON FERGUSSON, F.R.E.S.; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

COLLECTING APPARATUS.

Nets.	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

The EARLY HISTORY *of the* NORTH RIDING

By WM. EDWARDS, M.A.

Demy 4to (9″ × 11¼″), 283 *pages, with* 16 *plates, frontispiece in sepia, and Map of the North Riding at end. Full cloth* **10/6** *net, post free* **11/0.** *Edition de luxe, full leather, gilt top,* **21/-** *net, post free* **21/6.**

CONTENTS :—I. Prehistoric Times—II. The Romans—III. The Anglican Kingdom of Northumbria—IV. Pre-Conquest Monasteries—V. The Northmen—VI. The Norman Conquest and Settlement—VII. Political History under the Normans and Early Plantagenets—VIII. The Feudal System—IX. The Barons—X. North Riding Castles—XI. Thomas, Earl of Lancaster—XII. The Danger from the Scots—XIII. The Foundation of the Religious Houses (I.)—XIV. The Foundation of the Religious Houses (II.)—XV. The Life and Works of the Monks—XVI. The Wealth and Power of the Religious Houses—XVII. Churches and Chantries in the Middle Ages—XVIII. Town Life in the Middle Ages—XIX. Country Life in the Middle Ages—XX. The Forests—XXI. Early Yorkshire Pedigrees—Index of Place Names ; Index of Personal Names ; Index of Subjects.

The Manchester Guardian says :—" This is a readable, popular history from the New Stone Age to the fifteenth century, with chapters on the feudal system, on the numerous monasteries in the district, and on the daily life of monk and layman in the Middle Ages. In the period to which it relates the Riding was the scene of many foreign invasions and of much civil war, and the author's object has been to show the relation of the local history to that of the nation. The volume contains many illustrations, and the price is astonishingly low for so handsome a work.'

LONDON : A. BROWN & SONS, LTD., 5 FARRINGTON AVENUE, E.C.4.
AND AT HULL.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.	R. W. LLOYD, F.R.E.S.
H. G. CHAMPION, M.A., F.R.E.S.	F. LAING, M.A., B.Sc., F.R.E.S.
J. E. COLLIN, F.R.E.S.	H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

NATHANIEL LLOYD & CO., LTD., BURRELL STREET, LONDON, S.E.1.

Printed by A. BROWN & Sons, Ltd., Perth Street West, Hull, and published by A. BROWN & SONS, Ltd., at 5 Farringdon Avenue, in the City of London.
March, 1936.

03.42

PRIL, 1936

No. 951
No. 724 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

	PAGE
Beetles of Whitby and District—*H. Britten* .	73-81
Cumberland Coleoptera—*Jas. Murray*. . .	82
Some Results of a Moorland Fire—*Geo. B. Walsh, B.Sc.*	83-84
Record	84
Meeting of the British Association, 1936 . .	84
The Death-Roll of Birds on our Roads—*Maurice D. Barnes*	85-86
Bittern (*Botaurus stellaris*) at York—*Sydney H. Smith*	86
The Barn Owl in the Isle of Man—*W. S. Cowin*	87-88
The British Speleological Association—*L. S. Palmer*	89
In Memoriam—Albert Henry Pawson, J.P., F.L.S., F.G.S.—(*portrait*)—*T.S.*	90-92
Some Entomological Jacobites—*T. F. Marriner*.	93-94
Reviews and Book Notices	94-96
News from the Magazines . . .	82, 88, 96

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

SMITHSONIAN INSTITUTION
APR 16 1936
NATIONAL MUSEUM

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

WINESTEAD AND ITS LORDS

The History of a Holderness Village. By NORMAN JAMES MILLER. M.A., Rector of Winestead, 1890-1920. With a Foreword by THE ARCHBISHOP OF YORK. 258 pages, demy 8vo, 9 plates and 5 illustrations, quarter-bound cloth. 10/- net, or post-free, 10/6.

"Parish history is a notable aid to the cultivation of a keen national spirit. An excellent example is 'Winestead and its Lords,' by the late Canon N. J. Miller. The old church there is a shrine of English history, and the Rector holds his Rectory with house and glebe in unbroken succession from the appointment of Nicholas Maleth in 1237. Every phase of the making of England is illustrated in this chronicle of a quiet corner in 'the mersshy contree called Holdernesse,' as Chaucer describes it. Winestead was the birthplace of Andrew Marvell, and in his poems he recalls the lowly parsonage in which he was born."—*Morning Post.*

Obtainable from all booksellers

A. BROWN & SONS, LIMITED, 5 Farringdon Avenue, London, E.C.4.
AND AT HULL.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

BEETLES OF WHITBY AND DISTRICT

H. BRITTEN

The following is a list of Beetles which have been captured during 1935 by the writer, within a radius of twelve miles of Whitby. A list of the captures of 1934 was published in *The Naturalist*, December, 1934, pp. 275-277, which indicated a possible richness of the beetle fauna of the area not generally known to Yorkshire Coleopterists. The present list fulfils the promise as indicated by the addition of seventeen species new to the County of Yorkshire, and seven new to Vice-County 62 (North-East Yorkshire), also by the large number of rare or local species captured.

The season has proved an exceptionally good one from a Coleopterist's point of view, despite the long period of unusually dry weather. The district around Whitby affords much variety in ground suitable for collecting and at no period of the year was an opportunity neglected. A large number of generally common species were collected, which are not included in the list, a total of 650 species being the result of the writer's activities during the season. The rarity or otherwise of each species in Yorkshire is indicated in brackets.

My thanks are due to my father, H. Britten, F.R.E.S., The Museum, Victoria University, Manchester, for the determination of all the material collected, also for his advice in locating special beetles ; to W. J. Fordham, M.R.C.S., Barmby Moor, York, for his most kind assistance in checking my lists and providing me with the status of each species in Yorkshire ; to the various persons who sent me specimens or notes, these being indicated in the list by their initials as follows, T.S.= T. Stainforth, B.Sc., N.B.=N. Britten, H.W.=H. Wray, F.S.=F. Sutcliffe, and F.R.=F. Readman. All records without initials are the writer's. All species new to the County of Yorkshire are indicated by a dagger, whilst those new to Vice-County 62 are indicated by an asterisk.

**Cicindela campestris* L. v. *funebris* St. (Rare.) Goathland, 4/5/35. New to V.C. 62.

Carabus monilis F. (Uncommon.) Robin Hood's Bay, 22/6/35.

Nebria iberica Ol. (Local.) Glaisdale, 6/4/35 ; Robin Hood's Bay, 22/6/35 (T.S.).

Dyschirius globosus Hb. (Local.) Robin Hood's Bay, 22/6/35 (T.S. and H.B.) ; Goathland, 14/9/35.

Badister sodalis Df. (Uncommon.) Mulgrave Woods, 6/5/35 ; 11/6/35.

Bradycellus distinctus Dj. (Rare.) Sandsend, 23/4/35. This species was added to the Yorkshire List last year by the writer, from Upgang, 14/4/34.

B. sharpi Jy. (Rare.) Upgang, 17/3/35. Under stones on cliff.

Pterostichus lepidus Lk. (Rare.) Hellwath Beck, 3/8/35. Under stones.

APR 15 1936

Amara ovata F. (Rare.) Whitby, 31/5/35 ; 4/6/35 ; 9/6/35. Frequent on footpaths.

Agonum mulleri Hb. (Local.) Whitby, 20/5/35.

A. gracilis Gy. (Local and Rare.) Sandsend, 5/5/35 ; Sleights, 15/5/35.

Bembidion 5 *striatum* Gy. (Very local.) Whitby, 19/8/35. Frequent in garden.

B. mannerheimi Sg. (Local.) Skelder, 15/4/35 ; Mulgrave Woods, 11/6/35.

B. atrocæruleum S. (Very local.) Mulgrave Woods, 20/3/35 ; Staithes, 28/6/35.

B. redtenbacheri K.D. (Rare.) Raithwaite, 3/5/35 ; Sandsend, 5/5/35 ; Mulgrave Woods, 6/5/35 ; Robin Hood's Bay, 22/6/35 ; Hazel Head, 27/7/35.

B. decorum Pz. (Rather local.) Hellwath Beck, 20/7/35. Among gravel by stream.

B. 4-*maculatum* L. (Rather local.) Glaisdale, 6/4/35.

B. rupestre L. (Rare and local.) Hellwath Beck, 3/8/35. Among gravel by stream.

B. ustulatum L. (Local.) Mulgrave Woods, 20/3/35 ; Glaisdale, 6/4/35 ; Raithwaite, 28/5/35 ; Egton Bridge, 1/6/35.

Trechus 4 *striatus* Sk. (Local.) Skelder, 15/4/35 ; Raithwaite, 1/5/35 ; Whitby, 19/8/35.

Dromius agilis F. (Very local.) Staithes, 28/6/35.

D. nigriventris Th. (Local.) Sandsend, 23/4/35.

Deronectes elegans Pz. (Local.) Beckhole, 4/5/35.

D. borealis Gy. (Local.) Beckhole, 4/5/35 ; Mulgrave Woods, 6/5/35 ; Robin Hood's Bay, 22/6/35 (T.S. and H.B.).

D. sanmarki Sg. (Local.) Hellwath Beck, 3/8/35. Frequent in stream among stones.

Hydroporus striola Gy. (Very local.) Sleights, 9/6/35. In wet sphagnum.

H. memnonius Nc. (Local.) Sandsend, 5/5/35 ; Sleights, 15/5/35 ; Mulgrave Woods, 11/6/35.

H. nigrita F. (Local.) Goathland, 14/9/35. In wet sphagnum.

H. discretus Fr. (Very local and rare.) Whitby, 28/7/35. One specimen in a water-trough.

Laccobius nigriceps Th. (Local.) Sandsend, 5/5/35. Among wet rushes.

L. alutaceus Th. (Local.) Mulgrave Woods, 6/5/35 ; 11/6/35. Among wet vegetation by pond.

Megalelophorus aequalis Th. (Local.) Robin Hood's Bay, 22/6/35. On muddy margin of pond.

Sphæriduim 4-*maculatum* Mm. (Rare.) Raithwaite, 1/5/35 ; Whitby, 8/5/35. In stable manure.

**Cercyon lugubris* Ol. (Rare.) Whitby, 18/3/35 ; Raithwaite, 1/5/35 ; 28/5/35 ; Egton Bridge, 1/6/35.

C. lateralis Mm. (Local.) Raithwaite, 1/5/35 ; Mulgrave Woods, 6/5/35.

C. nigriceps Mm. (Rare.) Whitby, 12/3/35 ; 29/4/35. Among stable manure.

C. terminatus Mm. (Local.) Whitby, 12/3/35 ; 15/3/35. Among stable manure.

†*Aleochara diversa* Sg. (Rare.) Raithwaite, 1/5/35 ; Mulgrave Woods, 6/5/35 ; Whitby, 4/6/35. New to Yorkshire.

Oxypoda opaca Gr. (Local.) East Row, 23/4/35 ; Skelder, 15/4/35 ; Goathland, 14/7/35 ; Sleights, 6/10/35.

†*O. induta* Mt. (Rare.) Skelder, 15/4/35. New to Yorkshire. Among decayed vegetation.

O. spectabilis Mk. (Rare.) Sleights, 6/10/35. Among dead rushes.

O. nigrina Wt. (Very local.) Raithwaite, 1/5/35. Among decayed vegetation.

†*O. sericea* H. (Rare.) Whitby, 15/3/35 ; Skelder, 15/4/35. New to Yorkshire.

O. elongatula Ab. (Local.) Sandsend, 23/4/35 ; 5/5/35. Among decayed rushes.

O. hæmorrhoa Mn. (Rare.) Robin Hood's Bay, 22/6/35. In hay stack refuse.

Phloeopora testacea Mn. (Rare.) Mulgrave Woods, 6/5/35 ; Beckhole, 25/5/35.

Ocalea picata S. (Rare.) Skelder, 15/4/35.

Atheta currax Kr. (Rare.) Mulgrave Woods, 20/3/35.

A. cambrica Wo. (Rare.) Mulgrave Woods, 20/3/35.

A. exima Sh. (Rare.) Whitby, 21/6/35.

A. æquata Er. (Rare.) Mulgrave Woods, 11/6/35.

A. brunnea F. (Local.) Mulgrave Woods, 11/6/35.

A. occulta Er. (Rare.) Mulgrave Woods, 20/3/35, 23/11/35.

A. angusticollis Th. (Rare.) Goathland, 14/7/35. In fungi (*Polyporus squamosa*).

A. amicula S. (Local.) Goathland, 14/7/35. In fungi (*Polyporus squamosa*).

A. nigricornis Th. (Rare.) Mulgrave Woods, 20/3/35, 6/5/35, 10/8/35, 7/9/35 ; Egton Bridge, 1/6/35 ; Whitby, 30/9/35.

A. sodalis Er. (Rare.) Beckhole, 25/5/35 ; Goathland, 14/7/35.

†*A. nitidicollis* Fr. (Rare.) Goathland, 14/7/35. New to Yorks. In fungi.

A. inoptata Sh. (Rare.) Mulgrave Woods, 20/3/35 ; Goathland, 14/7/35 ; Sleights, 6/10/35.

†*A. xanthopus* Sh. (Rare.) Glaisdale, 6/4/35. New to Yorks.

A. triangulum Kr. (Rare.) Raithwaite, 1/5/35 ; Goathland, 14/7/35 ; Whitby, 23/7/35.

**A. euryptera* S. (Rare.) Egton Bridge, 1/6/35. New to V.C. 62.

A. longuiscula Gr. (Local.) Beckhole, 25/5/35.

A. arenicola Th. (Rare.) Skelder, 15/4/35.

A. zosteræ Th. (Local.) Mulgrave Woods, 20/3/35 ; Skelder, 15/4/35 ; Raithwaite, 1/5/35 ; Whitby, 29/4/35 ; Robin Hood's Bay, 22/6/35.

A. longicornis Gr. (Local.) Mulgrave Woods, 20/3/35 ; East Row, 25/4/35 ; Whitby, 29/4/35 ; Raithwaite, 28/5/35.

A. aterrima Gr. (Rare.) Skelder, 15/4/35 ; Raithwaite, 28/5/35.

†*A. dubia* Shp. (Rare.) Skelder, 15/4/35 ; Sandsend, 23/4/35, 5/5/35 ; Raithwaite, 28/5/35. New to Yorks.

†*A. clientula* Er. (Rare.) Mulgrave Woods, 6/3/35 (N.B.), 11/6/35 (H.B.) ; Robin Hood's Bay, 22/6/35 ; Goathland, 14/9/35. New to Yorks.

Gnypeta carbonaria Mn. (Local.) Mulgrave Woods, 6/5/35, 11/6/35 ; Robin Hood's Bay, 22/6/35.

Tachyusa leucopus Mm. (Local.) Mulgrave Woods, 6/5/35.

Falgaria sulcata Pk. (Local.) Whitby, 12/3/35, 15/3/35, 29/4/35.

Cardiola obscura Gr. (Local.) Whitby, 29/4/35.
Thectura cuspidata Er. (Rare.) Sleights, 28/7/35.
Homalota plana Gy. (Rare.) Egton Bridge, 1/6/35 ; Whitby, 23/6/35.
Gyrophæna affinis Sg. (Local.) Goathland, 14/7/35 ; Whitby, 23/7/35.
Leptusa fumida Er. (Local.) Goathland, 14/7/35 ; Sleights, 28/7/35 ; Hellwath Beck, 3/8/35.
Bolitochara obliqua Er. (Local.) Sleights, 9/6/35 ; Goathland, 14/7/35 ; Whitby, 23/7/35.
Oligata inflata Mn. (Local.) Robin Hood's Bay, 22/6/35.
O. apicata Er. (Rare.) Egton Bridge, 1/6/35.
Myllæna elongata Mh. (Very local.) Sandsend, 5/5/35.
Hypocyptus læriusculus Mn. (Very local.) Skelder, 15/4/35.
Tachyporus solutus Er. (Local.) Sandsend, 23/4/35.
T. scutellaris Ry. (Rare.) Skelder, 15/4/35.
T. tersus Er. (Rare.) Beckhole, 4/5/35 ; Sleights, 6/10/35.
T. nitidulus F. (Rather local.) Whitby, 31/5/35 ; Egton Bridge, 1/6/35 ; Robin Hood's Bay, 22/6/35.
T. transversalis Gr. (Very local.) Sandsend, 23/4/35 ; Whitby, 16/11/35.
Tachinus humeralis Gr. (Local.) Mulgrave Woods, 10/6/35.
T. laticollis Gr. (Very local.) Sandsend, 5/5/35 ; Raithwaite, 1/5/35 ; Whitby, 17/6/35.
T. elongatus Gy. (Rare.) Egton Bridge, 1/6/35.
Bryocharis inclinans Gr. (Local.) Sandsend, 23/4/35.
Bolitobius exoletus Er. (Local.) Staithes, 28/6/35.
B. thoracicus F. (Local.) Staithes, 28/6/35 ; Goathland, 14/7/35 ; Whitby, 23/7/35 ; Sleights, 6/10/35.
Mycetoporus brunneus Mm. (Local.) Beckhole, 4/5/35.
M. splendidus Gr. (Rare.) Skelder, 15/4/35.
Quedius maurus Sg. (Local.) Raithwaite, 1/5/35, 28/5/35 ; Goathland, 14/7/35 ; Runswick, 2/9/35 ; Mulgrave Woods, 7/9/35.
Q. lævigatus Gy. (Rare.) Mulgrave Woods, 7/9/35.
Q. picipes Mn. (Local.) Raithwaite, 11/3/35 ; Mulgrave Woods, 11/6/35.
Q. umbrinus Er. (Rare.) East Row, 23/4/35 ; Sandsend, 5/5/35.
Q. auricomus Kw. (Rare.) Sandsend, 23/4/35 ; Robin Hood's Bay, 22/6/35 (T.S. and H.B.).
Q. rufipes Gr. (Rare.) Mulgrave Woods, 7/9/35.
**Philonthus addendus* Sh. (Rare.) Whitby, 28/8/35. New to V.C. 62.
P. albipes Gr. (Rare.) Raithwaite, 28/5/35.
P. umbratilis Gr. (Local.) Skelder, 15/4/35.
P. cephalotes Gr. (Local.) Raithwaite, 1/5/35 ; Whitby, 4/6/35, 9/6/35.
P. sanguinolentus Gr. (Local.) Raithwaite, 28/5/35.
P. longicornis S. (Local.) Whitby, 15/3/35, 1/11/35.
P. ventralis Gr. (Local.) Whitby, 12/3/35, 18/3/35, 29/4/35.
P. discoideus Gr. (Local.) Whitby, 12/3/35, 18/3/35, 29/4/35 ; Mulgrave Woods, 20/3/35, 23/6/35, 10/8/35.
P. nigrita Gr. (Rare.) Sleights, 18/5/35.
†*P. rectangulus* Shp. (Rare.) Whitby, 12/3/35, 15/3/35, 18/3/35, 29/4/35. New to Yorks. In stable manure.
†*P. vernalis* Gr. (Rare.) Whitby, 15/3/35. New to Yorks. In stable manure.

Philonthus nigritulus Gr. (Very local.) Whitby, 15/3/35 ; Skelder, 15/4/35 ; Raithwaite, 1/5/35.

P. appendiculatus Sh. (Rare.) Beckhole, 4/5/35.

Xantholinus angustatus S. (Local.) Beckhole, 4/5/35 ; Mulgrave Woods, 6/5/35.

†*X. atratus* H. (Rare.) Whitby, 15/3/35 ; Mulgrave Woods, 10/8/35. New to Yorks.

X. longiventris H. (Local.) Whitby, 19/3/35.

Leptacinus parumpunctatus Gy. (Local.) Whitby, 12/3/35, 15/3/35, 18/3/35, 29/4/35, 1/11/35.

L. bathychrus Gy. (Local.) Whitby, 12/3/35, 29/4/35.

Othius myrmecophilus Kw. (Local.) Whitby, 4/8/35.

Lathrobium geminum Kr. (Local.) Mulgrave Woods, 11/6/35.

L. terminatum Gr. (Local.) Sandsend, 5/5/35 ; Sleights, 15/5/35.

L. multipunctatum Gr. (Local.) Sandsend, 5/5/35.

Stilicus rufipes Gm. (Local.) Raithwaite, 1/5/35.

S. erichsonii Fv. (Local.) Whitby, 15/3/35. In stable manure.

S. orbiculatus Pk. (Local.) Whitby, 12/3/35 ; Robin Hood's Bay, 22/6/35.

Dianus cœrulescens Gy. (Local.) Robin Hood's Bay, 22/6/35 (T.S. and H.B.).

Stenus fulvicornis S. (Local.) Sandsend, 23/4/35 ; Robin Hood's Bay, 22/6/35.

Bledius pallipes Gr. (Rare.) Mulgrave Woods, 10/6/35 ; Robin Hood's Bay, 22/6/35.

B. subterraneus Er. (Local.) Mulgrave Woods, 6/5/35.

Platysthethus arenarius Fc. (Local.) Whitby, 29/4/35 ; Egton Bridge, 1/6/35 ; Robin Hood's Bay, 22/6/35.

P. cornutus Gr. (Local.) Fylingdales Moor, 13/7/35.

Oxytelus inustus Gr. (Rare.) Robin Hood's Bay, 22/6/35.

O. complanatus Er. (Local.) Mulgrave Woods, 20/3/35, 6/5/35.

Ancyrophorus aureus Fv. (Local.) Mulgrave Woods, 20/3/35.

Trogophlœus elongatulus Er. (Local.) Sandsend, 23/4/35 ; Mulgrave Woods, 23/11/35.

T. pusillus Gr. (Local.) Whitby, 18/3/35 ; Mulgrave Woods, 20/3/35.

Coprophilus striatulus F. (Local.) Mulgrave Woods, 20/3/35, 6/5/35 ; Whitby, 17/3/35.

Lesteva heeri Fv. (Local.) Sandsend, 5/5/35.

L. punctata Er. (Local.) Raithwaite, 1/5/35 ; Sandsend, 5/5/35.

Omalium allardi Fr. (Local.) Mulgrave Woods, 6/5/35 ; Sleights, 15/5/35.

Phlœonomus pusillus Gr. (Local.) Sleights, 20/7/35.

P. pusillus var. *punctipennis* Th. (Local.) Beckhole, 25/5/35.

Phyllodrepa vilis Er. (Local.) Goathland, 14/9/35.

Xylodromus concinnus Mm. (Local.) Newholm, 10/3/35 ; Egton Bridge, 1/6/35 ; Whitby, 30/9/35.

Proteinus ovalis S. (Very local.) Skelder, 15/4/35; Goathland, 14/7/35; Mulgrave Woods, 11/11/35 ; Whitby, 1/11/35.

Megarthrus depressus Py. (Local.) Whitby, 22/1/35.

M. sinuatocollis Ld. (Local and rare). Whitby, 15/3/35.

Phlœocharis subtilissima Mn. (Local.) Goathland, 14/9/35.

Calyptomerus dubius Mm. (Rare.) Sandsend, 23/4/35.

†*Agathidium rotundatum* Gy. (Rare.) Mulgrave Woods, 11/6/35. New to Yorks.

**Agathidium nigrinum* St. (Very local.) Mulgrave Woods, 10/6/35. New to V.C. 62

Amphicyllus globus F. (Rare.) Mulgrave Woods, 10/6/35.

Anisotoma orbicularis Hb. (Rare.) Mulgrave Woods, 11/6/35.

Phosphuga atrata L. a. *brunnea* Hb. (Local.) Mulgrave Woods, 20/5/35.

Choleva agilis Il. (Rare.) Ruswarp, 1/7/35 (F.R.).

Catops nigricans Spn. (Local.) Whitby, 9/6/35.

†*C. fuliginosus* Er. (Rare.) Mulgrave Woods, 10/6/35. New to Yorks.

C. coracinus Kl. (Rare.) Mulgrave Woods, 20/3/35; Raithwaite, 28/5/35.

C. chrysomeloides Pz. (Uncommon.) Whitby, 17/6/35.

Sciodrepa fumatus Spn. (Local.) Mulgrave Woods, 6/5/35.

Ptomophagus subvillosus Gz. var. *sevicatus* Cd. (Rare.) Skelder, 15/4/35.

Neurophes angulatus Ml. (Very local.) Sandsend, 15/7/35.

Scyamænus tarsatus Ml. (Local.) Whitby, 29/4/35; Raithwaite, 1/6/35.

Bythinus bulbifer Rb. (Local.) Mulgrave Woods, 6/3/35 (N.B.).

B. burrelli Dy. (Very local.) Mulgrave Woods, 6/3/35 (N.B.).

Brachygluta fossulata Rb. (Local.) Mulgrave Woods, 10/6/35.

**Reichenbachia juncorum* Le. (Local.) Sandsend, 23/4/35. New to V.C. 62.

Trichopteryx atomaria D.G. (Local.) Mulgrave Woods, 6/3/35.

T. sericans H. (Rare.) Whitby, 12/3/35.

Coccinella 5-punctata L. (Very rare.) Whitby, 13/6/35.

Hyperaspis reppensis Hb. (Local.) Sandsend, 23/4/35; Fylingdales Moor, 13/7/35.

Scymus suturalis Tb. (Local.) Mulgrave Woods, 6/5/35, 10/6/35.

Chilocorus bipustulatus L. (Local.) Robin Hood's Bay, 22/6/35; Whitby, 23/6/35; Fylingdales Moor, 13/7/35; Hellwath Beck, 20/7/35.

Dacne rufifrons F. (Local.) Goathland, 14/7/35.

Cerylon histeroides F. (Local.) Mulgrave Woods, 7/9/35.

C. ferrugineum S. (Rare.) Mulgrave Woods, 7/9/35.

Hister striola Sg. (Local.) Goathland, 14/7/35; Hellwath Beck, 20/7/35.

H. 12-striatus Sk. (Local.) Whitby, 15/3/35, 29/4/35, 10/5/35.

Acritus nigricornis Hf. (Local.) Whitby, 12/3/35, 29/4/35; Mulgrave Woods, 7/9/35.

Micropeplus fulvus Er. (Local.) Raithwaite, 1/5/35.

Cateretes bipustulatus Pk. (Local.) Sleights, 18/5/35.

C. rufilabris Lt. (Local.) Robin Hood's Bay, 22/6/35; Whitby, 23/6/35; Fylingdales Moor, 13/7/35; Sleights, 28/7/35, 6/10/35; Hellwath Beck, 20/7/35.

Carpophilus hemipterus L. (Rare.) Whitby, 23/7/35.

Epuræa melina St. (Local.) Egton Bridge, 1/6/35; Sleights, 9/6/35; Mulgrave Woods, 10/6/35; Robin Hood's Bay, 22/6/35.

E. deleta St. (Local.) Goathland, 14/7/35; Whitby, 23/7/35; Mulgrave Woods, 7/9/35.

E. pusilla Il. (Local.) Egton Bridge, 1/6/35; Sleights, 28/7/35.

E. unicolor Ol. (Local.) Sleights, 9/6/35, 28/7/35.

E. melanocephala Mm. (Rare.) Beckhole, 4/5/35; Mulgrave Woods, 10/6/35.

Soronia grisea L. (Rather local.) Mulgrave Woods, 6/5/35 ; Goathland, 14/7/35.

Meligethes lumbaris St. (Local.) Sleights, 15/5/35 ; Beckhole, 25/5/35 ; Egton Bridge, 1/6/35.

M. obscurus Er. (Rare.) Sandsend, 23/4/35 ; Sleights, 6/10/35.

Glischrochilus 4-punctatus L. (Very local.) Stonegate Mill, 1/6/35 ; Sleights, 9/6/35 ; Goathland, 14/7/35.

Librodor 4-guttatus F. (Very local.) Stonegate Mill, 1/6/35 ; Sleights, 9/6/35 ; Egton Bridge, 1/6/35.

L. hortensis Fc. (Rare.) Stonegate Mill, 1/6/35 ; Sleights, 9/6/35.

Monotoma picipes Hb. (Local.) Whitby, 12/3/35, 18/3/35 ; Skelder, 15/4/35 ; Robin Hood's Bay, 22/6/35.

M. longicollis Gy. (Very local.) Whitby, 12/3/35, 29/4/35 ; Robin Hood's Bay, 22/6/35.

Enicmus histrio Jy. (Very local.) Mulgrave Woods, 6/5/35.

Corticaria umbilicata Bc. (Rare.) Sandsend, 23/4/35.

C. impressa Ol. (Local.) Sandsend, 23/4/35.

C. elongata Gy. (Local.) Robin Hood's Bay, 22/6/35.

†*Corticarina similata* Gy. (Rare.) Mulgrave Woods, 6/5/35.

Antherophagus nigricornis F. (Local.) Hazel Head, 27/7/35.

Cryptophagus lycoperdi Sp. (Very local.) Sleights, 6/10/35.

C. setulosus St. (Very local.) Sandsend, 23/4/35.

C. acutangulus Gy. (Rare.) Whitby, 10/3/35 ; Mulgrave Woods, 23/11/35.

C. badius St. (Very rare.) Sleights, 6/10/35.

C. scutellaris Nw. (Rare.) Robin Hood's Bay, 22/6/35.

Atomaria ruficornis Mm. (Very local.) Robin Hood's Bay, 22/6/35.

Ephistemus globulus Pk. (Rare.) Skelder, 15/4/35 ; Robin Hood's Bay, 22/6/35.

Pseudotriphyllus suturalis F. (Local.) Mulgrave Woods, 7/9/35.

†*Litargus connexus* Gy. (Rare.) Whitby, 23/6/35.

Asphidiphorus orbiculatus Gy. (Rare.) Mulgrave Woods, 10/6/35.

Heterocerus marginatus F. (Local.) Mulgrave Woods, 6/5/35.

Oxyomus silvestris Sp. (Very local.) Whitby, 29/4/35.

Limonius minutus L. (Very local.) Robin Hood's Bay, 22/6/35.

Agriotes sputator L. (Local.) Raithwaite, 28/5/35.

A. acuminatus S. (Local.) Mulgrave Woods, 6/5/35, 10/6/35.

Corymbites cupreus F. var. *æruginosa* F. (Local.) Ruswarp, 1/7/35 (F.R.)

Helodes marginata F. (Local.) Sleights, 9/6/35 ; Egton Bridge, 1/6/35.

Cyphon paykulli Gu. (Local.) Sleights, 9/6/35 ; Mulgrave Woods, 10/6/35.

C. ochraceus S. (Local.) Fylingdales Moor, 13/7/35.

Hydrocyphon deflexicollis Ml. (Rare.) Hellwath Beck, 20/7/35.

Podabrus alpinus Pk. (Local.) Hellwath Beck, 20/7/35.

Cantharis abdominalis F. var. *cyanea* Ct. (Local.) Robin Hood's Bay, 22/6/35 ; Ruswarp, 1/7/35 (F.R.).

C. paludosa Fn. (Local.) Robin Hood's Bay, 22/6/35.

Malthodes mysticus Kw. (Rare.) Hellwath Beck, 20/7/35.

M. flavogntttatus Kw. (Very local.) Hellwath Beck, 3/8/35.

Dasytes ærosus Kw. (Very local.) Mulgrave Woods, 10/6/35.

Dryophilus pusillus Gz. (Very local.) Mulgrave Woods, 10/6/35.

Grynobius excacatum Kl. (Local.) Mulgrave Woods, 10/6/35 ; Robin Hood's Bay, 22/6/35 ; Staithes, 28/6/35.

Ernobius mollis L. (Local.) Whitby, 23/7/35.

Ptilinus pectinicornis L. (Very local.) Whitby, 28/7/35. In *Pyrus aria* and *Poplus tremula*.

†*Dinoderus minutus* F. (Rare.) Whitby, 4/12/34 (one specimen in house), 26/11/35. Abundant in bamboo canes.

Lyctus linearis Gz. (Local.) Whitby, 14/7/35.

Cis nitidus F. (Rare.) Goathland, 14/9/35.

C. bidentatus Ol. (Local.) Mulgrave Woods, 7/9/35.

Tetropium gabrieli Wei. (Rare.) Sleights, 9/6/35. Extremely abundant in pine and larch stumps.

Rhaguim inquisitor L. (Rare.) Stonegate Mill, 1/6/35.

Strangalia 4-fasciata L. (Rare.) Hellwath Beck, 20/7/35, 3/8/35 ; Littlebeck, 28/8/35.

Leiopus nebulosus L. (Local.) New Wath, 27/7/35. In spider's web.

Pogonochærus hispidulus Pi. (Local.) Mulgrave Woods, 6/5/35.

**Stenostola ferrea* Sk. (Very rare.) Beckhole, 25/5/35. New to V.C. 62. On window curtain.

Plateumaris discolor Pz. (Very local.) Hellwath Beck, 20/7/35 ; Fylingdales Moor, 13/7/35.

Luperus flavipes B. (Local.) Beckhole, 25/5/35.

Haltica britteni Shp. (Local.) Fylingdales Moor, 13/7/35 ; Hazel Head, 27/7/35.

H. oleracea L. (Local.) Robin Hood's Bay, 22/6/35 (T.S. and H.B.) ; Fylingdales Moor, 13/7/35.

Phyllotreta tetrastigma Cm. (Very local.) Mulgrave Woods, 11/6/35.

Aphthona cyanella Rd. (Very local.) Mulgrave Woods, 10/6/35.

Baptophila rubi Pk. (Local.) Robin Hood's Bay, 22/6/35 ; Staithes, 28/6/35.

Chalcoides aurata Mm. (Local.) Hazel Head, 27/7/35.

C. fulvicornis F. (Local.) Beckhole, 25/5/35 ; Egton Bridge, 1/6/35 ; Mulgrave Woods, 10/6/35 ; Sleights, 28/7/35.

Psylloides chrysocephala L. (Very local.) Mulgrave Woods, 23/6/35.

P. napi F. (Local.) Mulgrave Woods, 20/3/35, 11/6/35.

Orchesia micans Pz. (Very local.) Hellwath Beck, 20/7/35 ; Mulgrave Woods, 11/11/35.

Abdera flexuosa Pk. (Very local.) Sleights, 9/6/35 ; Hellwath Beck, 20/7/35.

Anaspis garneysi Fw. (Rare.) Mulgrave Woods, 10/6/35.

A. regimbarti Sy. (Local.) Mulgrave Woods, 10/6/35 ; Goathland, 14/7/35.

Rhynchites cupreus L. (Very local.) Hellwath Beck, 20/7/35.

R. germanicus Hb. (Local.) Egton Bridge, 1/6/35 ; Whitby, 9/6/35.

Apion subulatum K. (Local.) Robin Hood's Bay, 22/6/35.

A. pallipes K. (Local.) Beckhole, 25/5/35 ; Egton Bridge, 1/6/35.

A. assimile K. (Local.) Egton Bridge, 1/6/35 ; Robin Hood's Bay, 22/6/35 ; Staithes, 28/6/35 ; Hazel Head, 27/7/35.

A. nigritarse K. (Local.) Egton Bridge, 1/6/35 ; Sleights, 28/7/35.

A. hookeri K. (Very local.) Staithes, 28/6/35.

A. punctigerum Pk. (Local.) Robin Hood's Bay, 22/6/35.

A. immune K. (Local.) Goathland, 14/7/35 ; Sleights, 6/10/35.

A. spencei K. (Local.) Beckhole, 25/5/35.

Apion scutellare K. (Rare.) Upgang, 17/3/35.
A. seniculum K. (Very local.) Beckhole, 25/5/35; Egton Bridge, 1/6/35.
A. affine K. (Local.) Beckhole, 25/5/35; Robin Hood's Bay, 22/6/35; Whitby, 23/6/35.
Strophosomus retusus Mm. (Local.) Egton Bridge, 1/6/35; Robin Hood's Bay, 22/6/35; Fylingdales Moor, 13/7/35.
S. faber Hb. (Very local.) Hellwath Beck, 20/7/35.
Barypithes araneiformis Sk. (Local.) Whitby, 23/7/35.
B. pellucidus Bh. (Rare.) Raithwaite, 28/5/35; Whitby, 31/5/35.
Omias mollinus Bh. (Very local.) Mulgrave Woods, 10/8/35.
Polydrosus mollis Str. (Local.) Beckhole, 4/5/35, 25/5/35; Egton Bridge, 1/6/35.
Phyllobuis maculicornis Gm. (Rather local.) Hazel Head, 27/7/35.
P. viridicollis F. (Rather local.) Beckhole, 25/5/35.
Barynotus squamosus Gm. var. *schonherri* Zt. (Very local.) Whitby, 19/8/35.
Sitona flavescens Mm. (Local.) Egton Bridge, 1/6/35; Robin Hood's Bay, 22/6/35; Whitby, 23/7/35; Sleights, 6/10/35.
S. sulcifrons Tb. (Local.) Robin Hood's Bay, 22/6/35.
Phytonomus plantaginis D.G. (Rather local.) Staithes, 28/6/35.
†*Orchestes pilosus* F. (Rare.) Robin Hood's Bay, 22/6/35.
Orthochætes setiger Bc. (Very local.) Hellwath Beck, 3/8/35.
Grypidus equiseti F. (Local.) Sandsend, 5/5/35.
Dorytomus rufulus Bd. (Very local.) Sleights, 28/7/35.
Gymnetron labiale Hb. (Local.) Beckhole, 25/5/35.
†*Anthonomus rubi* Hb. var. *comari* Ch. (Rare.) Robin Hood's Bay, 22/6/35.
Cionus alauda Hb. (Rather local.) Mulgrave Woods, 11/6/35.
C. pulchellus Hb. (Local.) Egton Bridge, 1/6/35.
Cœliodes rubicundus Hb. (Very local.) Robin Hood's Bay, 22/6/35.
Ceuthorhynchus cochleariæ Gy. (Rare.) Egton Bridge, 1/6/35.
C. asperifoliarum Gy. (Rare.) Egton Bridge, 1/6/35.
Rhinoncus castor F. (Very local.) Ruswarp, 1/7/35 (F.R.).
Limnobaris-t-album L. (Local.) Fylingdales Moor, 13/7/35; Goathland, 14/7/35.
Mesites tardyi Ct. (Very local.) Robin Hood's Bay, 22/6/35 (T.S. and H.B.).
Hylastes ater Pk. (Local.) Robin Hood's Bay, 22/6/35; Mulgrave Woods, 10/8/35.
H. palliatus Gy. (Local.) Sleights, 9/6/35, 28/7/35.
Hylastinus obscurus Mm. (Very local.) Robin Hood's Bay, 22/6/35; Sleights, 28/7/35; Littlebeck, 25/8/35.
Hylesinus crenatus F. (Local.) Goathland, 14/7/35, 14/9/35; Whitby, 23/7/35. Abundant in ash trunks.
Myclophilus piniperda L. (Local.) Staithes, 28/6/35. Abundant in dead pines.
Phlæopthorus rhododactylus Mm. (Local.) Sleights, 28/7/35; Littlebeck, 25/8/35. Abundant in branches of gorse broom.
Cryphalus asperatus Gy. (very rare.) Whitby, 9/6/35; Mulgrave Woods, 10/6/35. Abundant in bark of *P. tremula*.
Pityogenes bidentatus Hb. (Very local.) Sleights, 28/7/35, 6/10/35. Abundant in pine branches.
Anthribus variegatus Gf. (Rare.) Mulgrave Woods, 10/6/35.

CUMBERLAND COLEOPTERA

During several short excursions over the Border into North Cumberland, I have met with many species of Beetles, some of which are of interest. Of *Ocys harpaloides* Ser. I found several under loose bark of an uprooted tree on the banks of the River Esk. *Asaphidion flavipes* Lin. in a sandy creek by the River Esk near Mossband. It was recorded thence by T. C. Heysham, getting on for a century ago. A specimen of *Agabus sturmi* Gyll. was taken from a small stream near Longtown. One dull November day, in a very small quantity of flood rubbish from the River Esk near Mossband, I found the following: *Stenus juno* Fab. and *Falagria obscura* Gr. in plenty, *Stilicus erichsoni* Fauv. (one), *S. rufipes* Germ. (three), *Quedius fuliginosus* Gr., *Q. umbrinus* Er., *Q. scintillans* Gr., *Q. semiæneus* Steph., *Q. boops* Gr., and *Quedionuchus cinctus* Payk. From a Hawthorn bush near Breconhill Tower, I beat *Anthobium sorbi* Gyll. in numbers. *Metopsia clypeata* Müll., in grass tufts in April near the Beck Farm, close to the Border, where, later in the year, I swept *Meligethes erythropus* Gyll., *Barynotus obscurus* Fab., and *Adrastus nitidulus* Marsh. From a tree stump left by a flood on the Esk, I obtained a specimen of each of *Agathidium lavigatum* Er. and *Glischrochilus 4-punctatus* Lin. *Coccinella 11-punctata* Lin. is sometimes common along the River Esk in Autumn. Sweeping near the Clift in June produced *Mantura obtusata* Gyll. and *Cionus pulchellus* Hbst. Near Easton I found *Cantharis figurata* Man. in plenty in June, and one example of *Ptenidium nitidum* Heer. Another capture from refuse from the Esk was *Psylliodes napi* Fab. Many other common species have been taken or noted.—Jas. Murray, Burnside Road, Gretna.

NEWS FROM THE MAGAZINES

British Birds for March contains a record of the Roller (*Coracias g. garrulus*) in Yorkshire. It appears that the bird was shot in June, 1931, at Grinkle Park. The last previous record of a Roller in Yorkshire was in 1901.

The Entomologist's Monthly Magazine for February contains 'Miscellaneous observations on the biology of *Apanteles glomeratus* L. (Braconidæ) (with figures),' by A. G. Hamilton; 'Systematic notes upon British Aquatic Coleoptera,' by F. Balfour-Browne (Part X, Hydrovatus, Bidessus, and Hyphydrus); 'Parasites from rodents and shrews in the Outer Hebrides,' by C. Elton; 'The British Tullbergiinæ, Part II' (with figures), by R. S. Bagnall (*Neotullbergia laingi* Bagn. from Danes Dyke, Speeton, and Scotland. *Paratullbergia macdougalli* Bagn. from Ravenscar and Scotland, and *Neonaphorura anglicanus* Bagn. from Yorkshire); 'A contribution to our knowledge of the Psyllidæ of the Hebrides,' by G. Heslop-Harrison; and several shorter notes, including 'Further British records of *Anthicus tobias* Mars.,' by K. M. Guichard (Barton Moss, Lancs., taken by H. Britten).

SOME RESULTS OF A MOORLAND FIRE

GEO. B. WALSH, B.Sc.

In the last part of July and the beginning of August, 1934, there was a serious moorland fire which destroyed or badly damaged much of the vegetation on Seamer Moor, just outside Scarborough. Some hundreds of acres of heather were burned off, and two small pine coppices were almost completely destroyed, the only parts remaining being a few whole trees and the outer branches of a few other trees on the fringe of the planting. Over the greater part of the area, the flames moved rapidly over the ground, destroying the upper portion of the heather, but not affecting the roots ; as a result, the ground during the year (1935) was rapidly covered with a fresh growth of young heather, as normally happens after an intentional burning of old heather. In their passage from west to east the flames rushed through a small wood consisting mainly of birch and oak, of small size but of some age, and here more interesting results were to be seen. All the year's foliage was, of course, destroyed, but the branches of many of the trees still retained their buds—and in the case of the birches their flexible character—with no apparent injury. It is now possible to see more clearly the full effects of the damage suffered by the vegetation. All the birches first touched by the fire have been killed, and in some cases have now been uprooted by the wind. The oaks just behind this advance-guard are still alive and show little injury from the fire, being well covered with foliage last year. As the fire approached the path where it was finally stopped, it merely rushed through the upper foliage of the trees, burning off the year's leaves but not destroying the twigs which still remained green and lissom ; on the ground, however, in many places a much slower, smouldering fire spread through the peaty leaf-mould, and this persisted for a fortnight or more. This completely destroyed the heather both above and below ground, and in 1935 there was no sign of new growth. Its place is, however, being taken by Rose-bay Willow-herb (*Epilobium angustifolium*), which has completely covered the ground in the two pine coppices, and has established hundreds of new stations on the bare heath. This beautiful, insurgent plant is now rapidly colonising unoccupied areas all over our district. As recorded earlier (*Nat.*, 1935, p. 250), this in its turn is furnishing new stations for the Large Elephant Hawk Moth, which is now becoming quite common on the moor.

In one place the flames shot across the path and so scorched the needles of a number of larch trees that they all fell off. In mid-September, 1934, however, the buds, which should have opened in 1935 had already opened, and the trees were

covered with fresh green tassels just as in the spring. Unfortunately, however, the trees were all cut down in the winter so that no information could be gained as to the effect of this upon the trees ; it seems probable, however, that they would have died.

It would thus seem, then, that provided a moorland or woodland fire moves quickly enough over the heather and through deciduous trees which are not so close together as to furnish a bonfire of long duration, the damage it does is not so great as to destroy the life of the vegetation, although the animal life thereon may suffer extinction.

RECORD

THE PURPLE SAXIFRAGE IN 1936

THE winter of 1935/6 has been very different from those of the last few years and consequently the early blooms seen then have not been found this year. The Purple Saxifrage (*Saxifraga oppositifolia*) was in bloom on Pen-y-ghent on 24th February in 1935 and on 15th February in 1934. This year it did not flower until 18th March.

The little annual, *Hutchinsea petræa*, has kept more regular, the earliest flowers seen in Chapel le Dale being out in mid-March in each case. Celandines and Coltsfoot opening in mid-March are normal in the Austwick district, in the previous years early flowers were noted in January. Whilst on Pen-y-ghent on 18th March and 21st March the earliest of the migrants, the Ring Ousel, was heard and seen. The Wheatear was seen at Helwith Moss on 23rd March.—CHRIS. A. CHEETHAM.

MEETING OF THE BRITISH ASSOCIATION, 1936

SECTIONAL PRESIDENTS

FOR the annual meeting of the British Association in Blackpool from September 9th to 16th, under the Presidency of Sir Josiah Stamp, the following are the Sectional Presidents :—

Mathematical and Physical Sciences : Professor A. Ferguson.
Chemistry : Professor J. C. Philip, F.R.S.
Geology : Professor H. L. Hawkins.
Zoology : Dr. Julian Huxley.
Geography : Brig. H. S. L. Winterbotham, C.B., C.M.G., D.S.O.
Economic Science and Statistics : Dr. C. R. Fay.
Engineering : Professor W. Cramp.
Anthropology : Miss D. A. E. Garrod.
Physiology : Professor R. J. S. McDowall.
Psychology : Mr. A. W. Wolters.
Botany : Mr. J. Ramsbottom, O.B.E.
Educational Science : Sir Richard Livingstone.
Agriculture : Professor J. Hendrick.

The President of the Conference of Delegates of Corresponding Societies will be Dr. A. B. Rendle, F.R.S.

THE DEATH-ROLL OF BIRDS ON OUR ROADS

MAURICE D BARNES

For several years now, the writer has been observing with growing apprehension the increasing toll which motor vehicles are taking of our bird life. In 1935, therefore, a count of all the dead birds observed on the roads was made in the hope that other people might be brought to realise the menace this slaughter is to our bird population. As a bicycle was the means used for travelling about the countryside excellent opportunities were afforded for the census. It must, however, be remembered that although care was taken to ensure the compilation of as true a record as possible, it is certain that many birds were passed by unobserved.

During the year some 4,000 miles were travelled in the daylight and the dead birds counted numbered 940. This works out at 1 bird every 4.25 miles travelled.

If this carnage is going on throughout the country, and there is every reason to believe this is so, then the annual death-roll must be simply enormous.

Up to the present it does not appear that motorists have realised the damage they are doing, and I feel it is the duty of all nature lovers to bring to the notice of all road users the necessity for care, if we are to maintain our bird population at a normal level.

Of course, all people who travel about the countryside will realise the impossibility of entirely eliminating these accidents, as many deaths are caused by birds swooping from hedgerows directly in front of rapidly-moving traffic; under these circumstances accidents are unavoidable. On the other hand there are drivers who have no consideration for wild life which happens to be in their path and will drive through flocks of birds which have strayed on to the road without so much as blowing their horns. It is this sort of accident which could be avoided if only people could be brought to realise the damage which is being done.

Before closing here are some further observations which might be of interest.

(1) The birds commonly killed on the roads appear to be Sparrows, Finches, Yellow-hammers, Thrushes, Blackbirds, and Larks.

(2) Casualties seem to be most common on roads lined with hedges, especially when the hedges are close to the carriage-way. Most accidents on this sort of road are caused by the habit which many hedge-frequenting birds have of swooping low over the unobstructed roadway, a particularly dangerous practice where the hedgerows abut on to the carriage-way.

1936 April 1

(3) The number of deaths varies considerably during the year. The peak time appears to be about the middle of summer, the lowest period during the winter months. The great increase during the summer months is probably governed to a large extent by the following factors: the increase of motor traffic, the greater activity of bird life as a whole during the summer, the presence of numbers of young birds, not in possession of full flying capabilities, and, lastly, the numbers of insects on the roadways (especially where there are overhanging trees) which attract the birds at feeding times.

The following are some of the entries made during 1935 indicating the number of bodies observed with the dates and the distance covered whilst observations were being made:

Dates	Bodies	Mileage	Dates	Bodies	Mileage
13/4/35	3	120	28/7/35	52	83
26/4/35	12	117	6/8/35	78	132
5/5/35	25	93	14/9/35	6	57
26/5/35	28	103	22/9/35	2	62
8/6/35	14	64	12/10/35	2	36
22/6/35	22	100	20/10/35	3	102
21/7/35	171	100	3/11/35	—	92

(4) Another observation which appears to be of interest is that although Swallows seem to take a delight in skimming swiftly along within a few inches of the roadway, swooping up when the on-coming traffic is within a few feet of them, yet during the year only two Swallows were seen dead on the road.

In conclusion it is to be hoped that all nature lovers, whoever they may be, will spare no efforts to point out to the motoring public the damage which is being done on our roads to the many feathered friends which add so much colour and interest to both our town and country life.

BITTERN (*BOTAURUS STELLARIS*) AT YORK

SYDNEY H. SMITH

A SPECIMEN of this rare marsh bird frequented the margin of the little beck that empties into the pond on Hob Moor, York, on January 16th last. The bird was flushed by two setters which were being exercised by Mr. Alec House, Electrical Engineer, York.

As the district was ice-bound at this time, the stream in question was one of the very few open places where this bird could feed. No publicity was given to this visitor, and there is every reason to hope it has succeeded in reaching safer haunts.

THE BARN OWL IN THE ISLE OF MAN

W. S. COWIN

In view of the serious decrease in the number of Barn Owls breeding in England and Wales it is significant to point out that the species is rapidly establishing itself in the Isle of Man. It was not until 1933 that its nesting in the Island was confirmed, but in the last two years it has been reported all over the Island, and broods have been safely reared in at least half-a-dozen localities. In the light of these facts the following notes may be of interest.

On the 17th May last year (1935) my brother and I were shown a Barn Owl's nest containing seven eggs high up in the outer wall of a barn.

On our next visit the tameness of the sitting bird was extraordinary. We were quite unable to disturb it and at last the farmer reached in and brought it out, whereupon it lay perfectly still in his hands all the time we were examining the young and when held to the nesting-hole shuffled back as if it had been a domestic fowl, making no attempt to fly away.

At this date, 16th June, the nest held five young and an addled egg. According to the farmer the young had been hatched about a fortnight ; they were quaint little creatures, very weak and thinly covered with white down ; they kept their eyes tightly shut in daylight and were quite unable to stand upright.

On 30th June, when approximately four weeks old, the young Owls were not appreciably larger but had a much thicker covering of down through which the quills were just beginning to show.

On 21st July, when about seven weeks old, we took out of the nest three well-feathered young which still had quantities of down remaining. They were very savage and pecked viciously at anyone who attempted to touch them.

On 4th August, we paid our last visit to the farm. The young Owls would be about nine weeks old and the two oldest were able to fly about the farmyard. These latter had been out on the roof of the barn at night as they were found in an adjacent hole unconnected with the nesting chamber. They were not used to flying, however, and it is unlikely that they had yet flown of their own accord. The fledgling period would thus be something over sixty-three days. Four young were safely reared.

On the 28th July, we were shown another Barn Owl's nest about six feet down a hollow tree, the entrance being twelve feet above ground. This nest contained six fully

grown young which unlike those in the other nest hissed vigorously when disturbed. They could, in fact, be heard at some distance from the foot of the tree.

We brought two young out to ring but both flew from the top of the tree. One came down near a number of young turkeys and was immediately set upon by the turkey-hen and would certainly have been killed had we not interfered.

The Entomologist for March contains 'The Lepidoptera of Cara Island,' by W. H. Dowdeswell (3½ miles west of the Mull of Kintyre); 'The great frost of May, 1935, and its effects on butterfly life,' by Brig.-Gen. J. B. G. Tulloch; 'Notes upon some butterflies from Siam, with descriptions of new races and forms (Lep. *Rhopalocera*),' by G. Talbot; 'Yellow *Pieris napi*; a breeding experiment,' by J. Shepherd; 'Notes on Braconidæ: XV, Microgasterinæ,' by C. Morley; and numerous notes and observations, including '*Vanessa atalanta* hibernating in Yorkshire' (Flamborough Church, from November, 1934 to April, 1935); and '*Celerio galii* Rott. in the Team Valley, North Durham.'

The Entomologist's Monthly Magazine for March contains 'A contribution to our knowledge of the *Psyllidæ* of the Hebrides,' by G. Heslop Harrison; 'Coleoptera from the Outer Hebrides, with an account of a new British species, *Deronectes canariensis* Bedel,' by G. Heslop Harrison; 'Synonymical and other notes on the *Dryopidæ* (Coleoptera),' by H. E. Hinton; 'A revision of the British species of *Hoplocampa* Hartig. (Hymenoptera *Symphyta*), by H. W. Miles (with plate *H. brevis* Kl., new to Britain from Cambridge); 'Collembola from West Spitzbergen,' by J. M. Brown; 'A new species of Protura from Australia,' by H. Womersley; and 'Systematic notes upon British Aquatic Coleoptera. Part XI. *Haliplidæ* (*Peltodytes, Haliplus* and *Brychius*),' by F. Balfour-Browne.

The Entomologist's Record for March contains 'Notes on breeding *Leucania vitellina* Hb. and *L. albipuncta* F.' by E. A. Cockayne; 'July in North-Western Spain,' by P. Haig-Thomas; 'Lepidoptera in Denmark, 1935,' by Dr. Hoffmeyer; several Notes on collecting, etc.; 'Current Notes and Short Notices and Supplements'; 'British Noctuae,' by H. J. Turner; and 'Butterflies of the Upper Rhone Valley,' by R. Verity.

In the *Proceedings of the Leeds Philosophical and Literary Society*, Volume III, Part III, Dr. R. H. Evans has an interesting contribution on 'The elasticity and plasticity of rocks and artificial stone.'

We notice that the valuable annual *List of Geological Literature* added to the Geological Society's Library in London, is to be discontinued, presumably on account of expense. The Society reports that the discontinuance of the *Geological Literature* 'has been made possible by the publication, by the Geological Society of America, of a Bibliography and Index of Geology *exclusive of* North America, which that Society proposes to issue as an annual volume.'

The New Phytologist for December, contains papers on the activation of cambial growth by hormones, by R. Snow, and a series of three papers by L. J. Andus. H. Godwin and J. Barker on the effect of mechanical stimulation on plant respiration. W. M. Warden contributes an account of the endodermis and its associated ducts in *Senecio vulgaris*. W. R. Philipson one on the spikelet of *Agrostis canina*; and a genetical interpretation of the origin of heterospory is given by H. C. Pincher. Two papers of less specialised interest are by W. B. Turrill, on Krakatau and its floral problems and on exudation in Birch by C. T. Ingold.

THE BRITISH SPELEOLOGICAL ASSOCIATION

L. S. PALMER
Chairman of Council

THIS Association was recently formed under the Presidency of Sir Arthur Keith, F.R.S., with the objects of co-ordinating the results of cave excavations and explorations in this country, and of acting as a central bureau from which information pertaining to all aspects of Speleology might be distributed and through which those interested in cave work might become acquainted with others of similar or kindred interests.

At the present time the Association is preparing for publication a bibliography of papers on British Speleology and a catalogue of all prehistoric artefacts which have been excavated from the caves of this country and which are now scattered throughout various public and private museums. Steps are also being taken to organise a survey of the more important underground rivers and streams with a view to assisting the Inland Water Survey Committee of the Ministry of Health. An investigation into the relative advantages of gravitational and electrical geophysical methods for detecting caves is also being undertaken.

These and other objectives are to be carried out by the various associated Societies, Clubs, Museums, Libraries, etc., and by the individual members of the Association.

One of the most important functions of the Association is the organisation, each year, of a Speleological Conference. Through the kind hospitality of the Mayor and Corporation the Conference is to be held this year at Buxton from Friday, 24th July to Monday, 27th July inclusive. The Conference, attendance at which is free to members of the Association, will also be open on payment of five shillings to all persons interested in Speleology.

Societies, Clubs, Museums, Libraries, and similar bodies on payment of one guinea become associated Institutions and may appoint two representatives who will enjoy all the privileges of ordinary membership. On payment of half a guinea per annum or five guineas any person may become an Ordinary Member or a Life Member respectively.

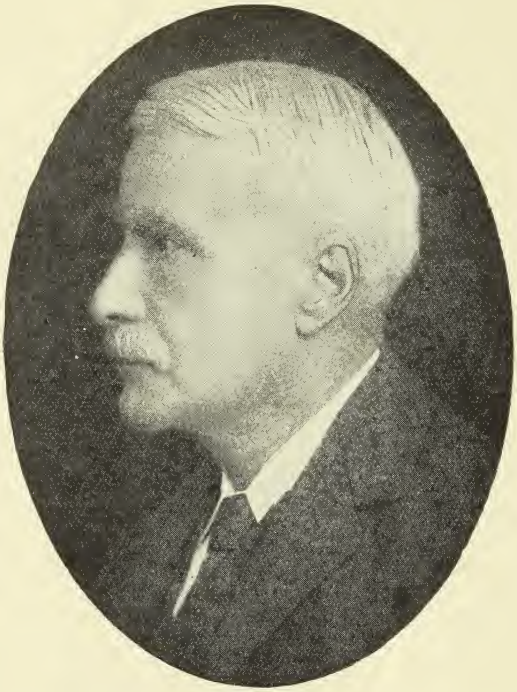
Further particulars of the Association and of the Buxton Conference may be obtained from the Honorary Secretary and Treasurer, Mr. G. H. Hill, The Museum, Buxton. Mr. E. Simpson, of Austwick, via Lancaster, is the Honorary Recorder of the Association, and to him should be forwarded all technical matters pertaining to the exploration and excavation of caves.

1936 April 1

In Memoriam

ALBERT HENRY PAWSON, J.P., F.L.S., F.G.S.
(1850—1935)

THE older members of the Yorkshire Naturalists' Union and the Yorkshire Geological Society, will remember with pleasure a delightful personality in A. H. Pawson. He was a practical field geologist and botanist of the old fashioned type, a keen collector, and always added a gaiety to the company in which



he associated. The present writer recollects quite well when forty years ago a party of geologists were perched perilously near the edge of the chalk cliffs at Danes' Dyke, examining the deposit containing Arctic shells, which had recently been described by the late G. W. Lamplugh. Mr. Pawson slipped and was very near knocking a number of us down like nine-pins, but he quietly remarked that he ' was able to pull up in time.'

His delightful garden at Farnley, near Leeds, was a place where many of us used to meet, and during his Presidency of the Union, in 1904, the members were invited to a garden

party there, which will long be remembered. In the charming grounds he had gathered together an enormous number of rare plants, but he regretted that the atmosphere of Leeds was having a detrimental effect on his botanical treasures, and in 1906, he finally left Farnley and settled in Oxfordshire, where he built a house near Watlington, on the slopes of the Chiltern Hills, and there he made another attractive garden, of which perhaps the most striking feature was the Alpine rockery.

It was here that in 1909, two of his friends, W. Denison Roebuck and John William Taylor (whose names are known and remembered) came to visit him ; and in memory of their visit presented him with a book which he greatly valued. This book they called *Annales Pawsonianae,* and at the beginning they wrote some notes on the Mollusca of the neighbourhood, beautifully illustrated by them in colour. W. Barwell Turner (President of the Leeds Naturalists' Club in 1881) emblazoned Mr. Pawson's coat of arms on the title page, and added some Nature Notes of his own ; and the pages were then left for their host's own notes and pictures to be added as he chose.

In the course of a few years those notes and pictures completely filled the book, and the entries show that Mr. Pawson still kept in touch with his friends, the Yorkshire Naturalists, and joined them on some of their excursions. Among them is a record of a visit to Filey in 1913, about which he wrote :—

> ' On Septr. 6, 1913, I observed an ice-worn block of mountain limestone at the foot of the cliffs of Boulder Clay, 4 miles south of Filey, a beautiful limestone boulder, polished and scratched on all sides, with veins of calespar. I guessed its weight at 150 lbs ; it needed a strong man to lift it.'

A photograph was taken *in situ* by Mr. J. W. Taylor, his companion on the occasion. A carriage was procured to convey the boulder, and it was taken to Oxfordshire by rail and placed in a prominent position in Mr. Pawson's garden.

His Presidential Address, which is printed in *The Naturalist,* for January, 1905, was entitled ' Weeds,' but gave much information relating to our plants.

Some years ago it will be remembered that the present writer published in *The Naturalist* a series of notes on ' Prominent Yorkshire Workers.' On writing to Mr. Pawson in order to obtain some facts about his work in the county, he sent me the excellent photograph which is reproduced here, but which he refused to allow to be used until the time came for his obituary notice.

1936 April 1

Like many a practical field geologist he was not a great writer, and a review of Professor Williamson's *Autobiography*, published in *The Naturalist* in 1896, was the only occasion, beyond the Address referred to, upon which he could be prevailed to contribute anything to the Journal.

Albert Henry Pawson, whose father William Pawson was Mayor of Leeds in 1841 (see *The Municipal History of the Borough of Leeds*, by James Wardell, Leeds, 1846), succeeded to the Lawns House Estate at Farnley, and continued to carry on the family business of woollen manufacturer at Stonebridge Mills. When he gave this up he settled, as already mentioned, in South Oxfordshire, where he became a J.P. for the County.

He travelled widely and was keenly interested in antiquities. He was a man of remarkably wide culture; those who knew him will not easily forget the originality and generosity of his character and the fulness of his knowledge. He always followed the family tradition of good citizenship in Leeds, and especially in his own village of Farnley, and in Oxfordshire he was actuated by the same sense of duty.

A short extract from an account of him in an Oxfordshire paper, when he left Oxfordshire in 1920, will show this.

> ' There are few people whose departure from Watlington will be felt as keenly as that of Mr. Pawson. Only a few weeks after his arrival there he helped to save from destruction the fine old Market Hall, built in 1664, by Thomas Stonor, and he continued to support all good objects, The South Oxon. Branch of the Navy League, The Red Cross Convalescent Hospital at Swyncombe, the local Volunteer movement, which he joined personally in the War, the beautiful War Memorial, and many others, while his modesty and courtesy made him deservedly popular with all who knew him.'

In 1879, he married Alice, daughter of Matthew Bateson Wood, by whom he had three sons and one daughter; the eldest son died while finishing his education at Oxford, but his widow and the three other children all survive him. No record of Mr. Pawson would be complete without some mention of his wife—his constant and devoted companion throughout his married life. Not only did she take the keenest interest in his many pursuits and activities, but she accompanied him in all his travels and rambles whether in Europe or his own country. She was his chief inspiration in social and philanthropic work, and especially for seven years before the War, her work for the Navy and Red Cross Leagues, and, during the War, as Lady Superintendent of Swyncombe Red Cross Hospital, were its complement and fulfilment.—T.S.

SOME ENTOMOLOGICAL JACOBITES

T. F. MARRINER

WHAT a remarkable plant for the Entomologist is Ragwort, *Senecio Jacobæa* L. How truly wonderful it is, is not realised until one comes to try and make out a list of the insects connected with it. It is the home or feeding ground of many families and many species. The list which follows, though not exhaustive, shows some of these Entomological Jacobites, as I call them for want of a better all-embracing title.

LEPIDOPTERA :—

Euchelia jacobæa L., the Cinnabar Moth whose larva may be found on the plant in July and August, and the Moth in May and June.
Epunda lichenea (Hb.) Noctua Moth, *Plusia iota* L. the Golden Y., also occurs on nettles.
E. lutulenta, the Deep-brown Dart.
Eupithecia absinthiata (Cl.) the Wormwood Pug. *E. pimpinellata* (Gn.) the Burnet Pug.
E. vulgata (Hw.) the Common Pug. Also on Hawthorn.
E. virgaureata (Crewe) the Golden Rod Pug.
Homoeosoma senecionis (=*cretacella* Rossi.), one of the Knot-horns. Mr. G. B. Routledge informed me that the larvæ of this are to be found in the flowers and on the stems in June, August, and September and the Moth in May and July.
H. nimbella (=*saxicola* Vaugh.).
H. nebulella.
Scopula alpinalis (Denis) the Alpine Pearl.
Eupoecilia atricapitana (Steph.).
E. dubitana.
Argyrolepia aeneana.
Agrotis simulans (Huf.) the Dotted Rustic.
Arctia villica L., the Cream Spot Tiger.
Perenoptilota fluviata the Gem.
Grapholitha (Eucosma) *nigromaculana* (Haw.).
Ephippiphora trigeminana (Steph.).
Coleophora tricolor. Local and only known in Norfolk and Sussex.
Timandra armataria (L.) the Blood Vein.

HEMIPTERA—HETEROPTERA :—

Carpocoris fuscipina (Boh.).
Myrmus miriformis (Fall.). (vide Mulsant v. Rey).
Berytus signoreti (Fieb.) according to Claude Morley found among the roots.
Lygus pratensis L. is an abundant insect on the flowers of various species of Senecio.
Capsus ruber L.
Plagiognathus albustorum (Fab.).
Therapha hyoscyami L. on flowers.
Monanthia ciliata F. at roots.
M. simplex (M.S.).
Phytocoris ulmi L. and *Calocoris bipunctatus* F. are both given by Claude Morley as found on flowers.

COLEOPTERA :—

Longitarsus jacobæa, L. picipes, L. suturellus, L. gracilis and *L.*

ochroleucus are all jacobites as also are *Cassida fastuosa*, and, according to Rye *C. vittata*.

THYSANOPTERA :—

Mr. James Murray, of Gretna, tells me that *Haplothrips senecionis* (Bag.) is found only on *Senecio jacobæa*.

ACULEATE HYMENOPTERA :—

Colletes fodiens (Kirb.) with its parasite *Epeolus variegatus*.
Andrena nigriceps (Kirby).

REVIEWS AND BOOK NOTICES

Plant Viruses, by **K. M. Smith**, pp. 103, 11 illustrations, 3/6 net. (Methuen). This is a little book of a somewhat specialised interest, which outlines the present state of our knowledge of the plant viruses. The possibility that the viruses may be living organisms, although they can pass through a normal filter, attaches to them great biological interest in addition to their great economic importance. Those interested in these general questions, as well as those interested in plant diseases, will find this book an admirable summary of existing information.

Tissue Culture, by **E. N. Willmer**, pp. 120, 2 plates and 9 text figures, 4/-. (Methuen). The cultivation of animal tissues in sterile laboratory conditions has thrown great light on certain aspects of animal metabolism and growth, and it has also demonstrated that animal tissues are potentially, at least, immortal, since they can continue to grow under suitable laboratory conditions with unabated activity. The difficulties of these lines of investigation are admirably brought out in this volume, which summarises the existing information in a clear and interesting manner.

A Geography of Europe, by **R. Blanchard** and **R. E. Crist**, pp. 508, 44 maps and diagrams, 188 half-tone illustrations, 12/6 net. (Methuen). This book, though dealing with a subject somewhat outside the scope of this journal, is worthy of notice because it includes features not easily obtainable elsewhere. The authors never lose sight of the fact that their subject has an ecological background and the result is a book of quite considerable general interest. There can be few books which so clearly present the salient features of each main type of land surface and vegetation covering in Europe. To a large extent this may be because the authors have taken full advantage of aeroplane photographs. The diagrams are also interesting and often unusual. Such, for example, as those giving types of seasonal river flow in different parts of the Continent. Lastly they emphasise the ecological origins and developmental drifts of different industrial areas in some striking passages—notably one on Great Britain.

Man's Delight, by **Joseph Wenter** (translated by Chas. Ashleigh), pp. 216, 6/- net. (Rich and Cowan Ltd.). The author of this book possesses a gift for writing about the lives of animals in an interesting and intimate way. A previous work of his, about the Rhine salmon, was notable for its detailed knowledge of fish life. The present volume

deals with the life of a young foal on the South American pampas. It is a detailed picture of wild life in those regions as well as of the habits of wild horses. The treatment is necessarily somewhat anthropomorphic, but it is extremely convincing and makes engrossing reading. A word of commendation is due also to the translator who has done his work well and sympathetically. Altogether this is an extremely interesting book.

Herbs. (Bulletin 76. Ministry of Agriculture and Fisheries, 1/- net, postage extra, H.M. Stationery Office, Adastral House, Kingsway, W.C.2.). In these days of synthetic drugs, it is somewhat surprising to find that considerable areas in this country are engaged in the cultivation of herbs. Those interested in the herbs grown in Britain will find much of interest in this little book. It describes the principal British herbs, whether culinary, aromatic or medicinal, and it outlines the requisites for their successful cultivation. The subject naturally lends itself to much of incidental interest, not least of which is the pleasant historical treatment of the introduction. There should be a considerable demand for this bulletin.

The Wool-Textile Industry of the Pennines in its Physical Setting, Part 1, by **W. B. Crump.** Reprinted from the *Journal of the Textile Institute*, Vol. XXVI, 1935. Price 1/-. (Textile Institute, 16 St. Mary's Parsonage, Manchester, 3.). Mr. Crump's interest in the history of the Pennines has long been evident, and in this pamphlet he embarks on a full account of what is really the human ecology of the district. He traces the origin of the textile industry, its indebtedness to the Cistercian monks and its subsequent development. The relation between the zoning of the weaving, fulling and marketing areas and the topographical and geological features of the district is full and clear and the treatment throughout is that of one intimately acquainted with the subject. The result will be of interest to all who know the district. The principles involved apply to all the Southern Pennines.

Welsh Timber Trees, by **H. A. Hyde,** pp. 107, 25 plates, 24 text figures, 2/- net. (The National Museum of Wales, Cardiff). This is the second and revised edition of a little book published first in 1931. It is an extremely useful summary of the main features of the trees found in Wales and it would serve almost equally well for most parts of the British Isles. The typical planted conifers are included and there are excellent plates of typical trees as well as diagrams of diagnostic characters. Apart from these systematic features, useful notes on the status, distribution and chief ecological features of the various tree species in Wales make this a useful work of reference. It is, at a very modest price, definitely a book to be recommended.

Insect Pests of Glass-House Crops, by **H. W.** and **M. Miles,** pp. 174, 101 plates and figures, price 8/6 (by post 9/-). (H. C. Long, The Birkins, Orchard Road, Hook, Surbiton, Surrey). The wide range of insect pests which cause serious damage to crops is so great, that it is very useful to have brought together in one cover an account of those found on glass-house crops. While this work is primarily of use to those interested in growing glass-house plants, it possesses many excellent illustrations of the insects, mostly photographic, and useful details of life histories. A good deal of attention is paid to measures for controlling attacks of the various pests. The whole makes a useful volume.

Salinity and Temperature of the English Channel, by **J. R. Lumby,** Ministry of Agriculture and Fisheries : Fishing Investigations, Vol. XIV. No. 3, price 7/- net. Charts separately £1. (H.M. Stationery Office). This publication represents an exhaustive analysis of the temperature and salinity conditions over the twenty-five years ending 1927. It is perhaps most remarkable as a detailed attempt to apply modern statistical methods to the observations recorded and hence a brief summary is a matter of some difficulty. In general, however, the results confirm the general assumption that the Channel water becomes cooler and less salt as one progresses either from west to east or from the middle to the shores. The seasonal and periodic variations are also given. Peaks of salinity occurring in 1905 and 1922 may possibly be correlated with major tidal oscillations. This is a valuable collection of data.

NEWS FROM THE MAGAZINES

In *The Quarry* for February, Mr. Albert Wilkinson has a well illustrated paper on ' The Great Whinstone Dyke and an Appreciation of Whinstone as a Road-making Material.'

In continuing its series on ' Some Notable Museums,' *The North-Western* Naturalist for December has an account of the Middlesbrough Museum, with illustrations of its new Egyptian room, recently opened by Mr. T. Sheppard, already referred to in these pages.

The Entomologist's Record for February contains ' British Trypetidæ, Additional Notes,' by M. Niblett ; ' Collecting in Dorset (8th-21st July) and Kent (15th-29th September), 1934,' by F. H. Lees ; ' Early Stages of Indian Lepidoptera,' by D. G. Sevastopulo ; ' Scientific Notes and Observations,' and notes on collecting, etc. ; and supplements, ' The British Noctuæ and their Varieties,' by H. J. Turner ; and ' Butterflies of the Upper Rhone Valley,' by R. Verity.

In the last number of the *Proceedings of the Geologists' Association*, recently published, there is a report of a field meeting in the Leighton Buzzard district, by H. A. Toombs, which is of great interest. Geologists will remember the discussion years ago between Lamplugh on the one hand and Kitchen, Pringle, and party on the other, in reference to fossil remains found in and below the Gault of Leighton Buzzard. Along with other Yorkshire geologists the reviewer could never believe that Lamplugh would make a mistake in a field observation which certain palæontologists assumed he must have done. Kitchen and Pringle, it may be remembered, relied largely on the evidence furnished by other experts, when bringing forward their theory of glacial overturning. From the report just issued it seems clear that Lamplugh was right after all, and that these experts were wrong, but it is difficult to grasp this from the report in question, as it seems to have been so severely edited that the admission of the mistake is very difficult to detect.

Clearly the Gault is not overturned. This was known six years ago, but nobody before Toombs took it up. It is now the business of the experts who determined fossils from below the Gault as of post-Gault age, to explain how these fossils got there, or else to revise their identifications.

The Scottish Naturalist for March-April (No. 218) contains an article ' Territory and Distributional Variation in Woodland Birds,' by Vernon D. van Someren, and one on ' A Census of Rookeries in Greater Edinburgh ' by the Midlothian Ornithological Club.

The Essex Naturalist for October, 1935-March, 1936 (Vol. XXV, Part II), contains a long article on ' Jellyfish,' by F. J. Lambert. The author deals fully with the study of a rather difficult subject. The article is well illustrated and concludes with a comprehensive bibliography.

COLLECTING APPARATUS.

Nets.	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

The EARLY HISTORY *of the* NORTH RIDING

By WM. EDWARDS, M.A.

Demy 4to (9″ × 11¼″), *283 pages, with 16 plates, frontispiece in sepia, and Map of the North Riding at end. Full cloth* **10/6** *net, post free* **11/0.**
Edition de luxe, full leather, gilt top, **21/-** *net, post free* **21/6.**

CONTENTS :—I. Prehistoric Times—II. The Romans—III. The Anglican Kingdom of Northumbria—IV. Pre-Conquest Monasteries—V. The Northmen—VI. The Norman Conquest and Settlement—VII. Political History under the Normans and Early Plantagenets—VIII. The Feudal System—IX. The Barons—X. North Riding Castles—XI. Thomas, Earl of Lancaster—XII. The Danger from the Scots—XIII. The Foundation of the Religious Houses (I.)—XIV. The Foundation of the Religious Houses (II.)—XV. The Life and Works of the Monks—XVI. The Wealth and Power of the Religious Houses—XVII. Churches and Chantries in the Middle Ages—XVIII. Town Life in the Middle Ages—XIX. Country Life in the Middle Ages—XX. The Forests—XXI. Early Yorkshire Pedigrees—Index of Place Names ; Index of Personal Names ; Index of Subjects.

The Manchester Guardian says :—" This is a readable, popular history from the New Stone Age to the fifteenth century, with chapters on the feudal system, on the numerous monasteries in the district, and on the daily life of monk and layman in the Middle Ages. In the period to which it relates the Riding was the scene of many foreign invasions and of much civil war, and the author's object has been to show the relation of the local history to that of the nation. The volume contains many illustrations, and the price is astonishingly low for so handsome a work.'

LONDON : A. BROWN & SONS, LTD., 5 FARRINGTON AVENUE, E.C.4.
AND AT HULL.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, **6/-** *post free. Single Parts,* **1/3.**

All communications to be addressed to—

W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126 **Telephone: Temple Bar 9451.**

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

NORTH WESTERN NATURALIST

A Scientific and Educational Journal (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

Edited by A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.
J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., Ph.D.
C. L. WALTON, M.Sc., Ph.D.
F. E. WEISS, D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.Met.S.

Communications to :—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.
Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. **Single copies, 2/- net.**

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. Eagle Clarke, F.R.S.E., and F. Boyes.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. Fortune, F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

London : A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C. 4.
And at Hull.

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS.

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net.

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.

London : A. BROWN & SONS, Ltd., 5 Farringdon Avenue E.C.4.

Printed by A. Brown & Sons, Ltd., Perth Street West, Hull, and published by A. Brown & Sons, Ltd., at 5 Farringdon Avenue, in the City of London.
April, 1936.

93.42

AY, 1936

No. 952
No. 725 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

SMITHSONIAN INSTITUTION
MAY 12 1936
NATIONAL MUSEUM

Contents

PAGE

The Common Herring (*illustrated*)—*Elliot B. Deaberry, M.R.I.P.H., M.R.San.I.* . . . 97-104

Distribution of *Swartzia inclinata* Ehrh., in Yorkshire—*Chris. A. Cheetham* 104

The Eclipse Plumage of Drakes—*Richard Perry* 105-110

The Copper Deposits of Middleton Tyas, N. Yorks—*Dr. A. Raistrick, F.G.S., M.I.Min.E.* 111-115

In Memoriam—Samuel Clough, J.P.—*H.B.B.* . 115

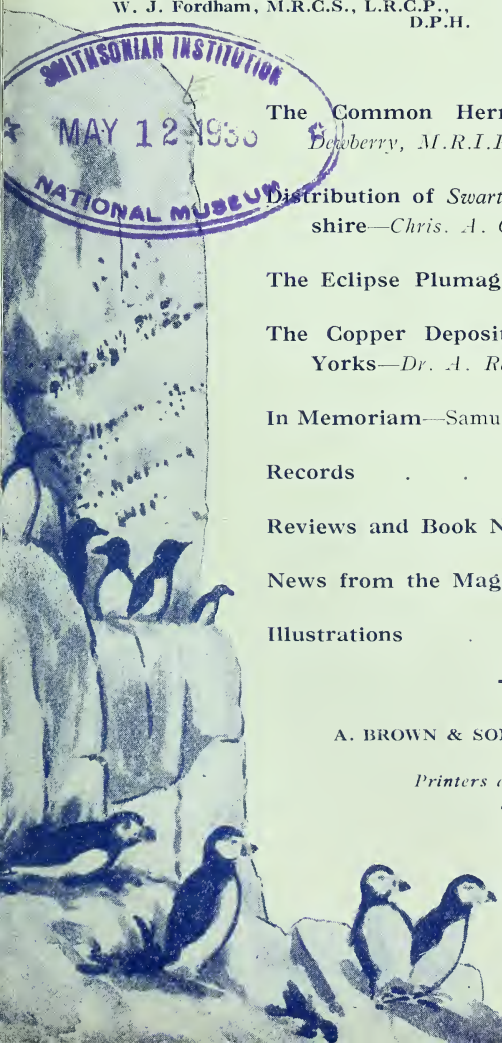
Records 116-118

Reviews and Book Notices 118-119

News from the Magazines 110, 120

Illustrations 99, 101

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.



PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS.

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net.

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.

LONDON : A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE E.C.4.

WINESTEAD AND ITS LORDS

The History of a Holderness Village. By NORMAN JAMES MILLER. M.A., Rector of Winestead, 1890-1920. With a Foreword by THE ARCHBISHOP OF YORK. 258 pages, demy 8vo, 9 plates and 5 illustrations, quarter-bound cloth. 10/- net, or post-free, 10/6.

"Parish history is a notable aid to the cultivation of a keen national spirit. An excellent example is 'Winestead and its Lords,' by the late Canon N. J. Miller. The old church there is a shrine of English history, and the Rector holds his Rectory with house and glebe in unbroken succession from the appointment of Nicholas Maleth in 1237. Every phase of the making of England is illustrated in this chronicle of a quiet corner in 'the mersshy contree called Holdernesse,' as Chaucer describes it. Winestead was the birthplace of Andrew Marvell, and in his poems he recalls the lowly parsonage in which he was born."—*Morning Post.*

Obtainable from all booksellers

A. BROWN & SONS, LIMITED, 5 Farringdon Avenue, London, E.C.4.
AND AT HULL.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- *per volume, or post free* 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

SMITHSONIAN INSTITUTION
MAY 12 1936
NATIONAL MUSEUM

THE COMMON HERRING

(*Clupea harengus* Linn.)

ELLIOT B. DEWBERRY, M.R.I.P.H., M.R.SAN.I.

THE herring family, known scientifically as *Clupeidae*, consists of a group of coastal fishes widely distributed in temperate and tropical seas. The family includes besides the common herring, the pilchard or sardine (*C. pilchardus*), the sprat (*C. sprattus*), the anchovy (*C. encrasichlus*), the Allis shad (*C. alosa*), and the Twaite shad (*C. finta*), all of which are met with in the waters of Northern Europe, and many other species which are used for food purposes, or which yield oil. A number of the fish live in fresh or brackish water, while others live alternately in salt and fresh water. Some of the tropical varieties are more or less poisonous if eaten.

The common herring formed an important article of commerce at a very early date in history, and its importance as a source of wealth and power has been acknowledged by every maritime nation. It might even be said that a tale as exciting as any fiction could be written on the part played by the herring in the history of some countries, and in several instances it appears to have been a factor in shaping the destiny of nations and monarchs.

The habitat of the herring extends from the White Sea to the Bay of Biscay. In the Atlantic Ocean it is found from North of Cape Cod to Greenland and around Iceland and the Faroes. Varieties are also present in the Caspian Sea and the Black Sea, and the North Pacific Ocean. It is, however, absent from the Mediterranean. It abounds all round the British Isles but the most important fisheries are in the North Sea, off the East Coast of England and Scotland, the West Coast of Norway and the Baltic Sea. Vast numbers of herrings are caught from the large shoals which inhabit these waters and it has been calculated that an acre of sea off the East Coast of England will yield as much food for human consumption as a hundred acres of grassland. The areage of the North Sea is about 130,000 square miles and more than a million tons of fish are taken from it every year. In the English Channel the fishery is of less importance and the quality of the fish inferior.

The herring is a prolific breeder, and if all the progeny of a single pair were to reach maturity and spawn, and if all their progeny were to survive and spawn, and such unstricted multiplication were to continue for ten years, all the seas of the earth would be filled solid with herrings. A shoal of

MAY

herrings may be 8 to 9 miles in length, 3 to 4 miles in breadth, and contain as many as 3,000,000,000 closely packed fish.

Historical

From time to time fossil forms of *Clupea* have been discovered in Sweden, Norway, France, Germany, Switzerland, and countries bordering on the Mediterranean Sea, all suggestive of an extensive distribution. The earliest traces, however, of the herring being used for human food are present in the kitchen middens of the ancient peoples who lived on the Dutch coast. Enormous quantities of fish bones have been found in these collections of refuse, the commonest being those of the herring. Although these remains prove that an ancient fishery existed, nothing is known of the means used for catching the fish, but probably they were speared or caught with hooks made from thorns. Angling for food must have been one of the earliest of human activities and apparently the herring was among the first fish so caught. Herring fishing was doubtless carried on in the North Sea, English Channel and the Baltic Sea at a very early date. The first authentic records of a North Sea fishery relate to Great Yarmouth, and there is no doubt that the formation of this part of the Norfolk coast, together with the estuary of the Yare, afforded excellent facilities for fishing.

Swinden, in his history on the antiquities of Great Yarmouth, considers that the herring fishery commenced there soon after the landing of Cedric the Saxon in A.D. 495. He states that the Church of St. Bennett, which is supposed to have been built by Felix I, Bishop of East Anglia in A.D. 647, was erected upon the Green Hill, and a godly man placed in it to pray for the health and success of the fishermen who came to Great Yarmouth during the herring season. Because of the importance of the fishing industry, Henry I in A.D. 1108, erected Great Yarmouth into a Burgh on annual payment of ten milliers of herring.

By the statutes of 1357, the sale of herring at sea was forbidden. The fish were landed at Great Yarmouth and sold at the fair which was instituted in 1270. It was about this period that the River Yare changed its course, the old Yarmouth harbour silting up and a new mouth formed. This change no doubt caused considerable inconvenience to the fishermen and in a measure contributed to the development of the Dutch industry.

The importance of the herring fishery attracted foreign fishermen to England and before the Norman Conquest large numbers came over from Flanders and Normandy and carried on a fishery in small open boats, using drift nets. As the demand increased they were compelled to go farther out to

sea, necessitating the use of larger vessels. From this source a large part of catholic Europe was supplied with herrings.

The Norwegian fishery has been of much importance since the earliest times and it is recorded that in 1304 Norwegian vessels came to King's Lynn, Norfolk, laden with herrings.

The Dutch commenced fishing about the year 1164 and

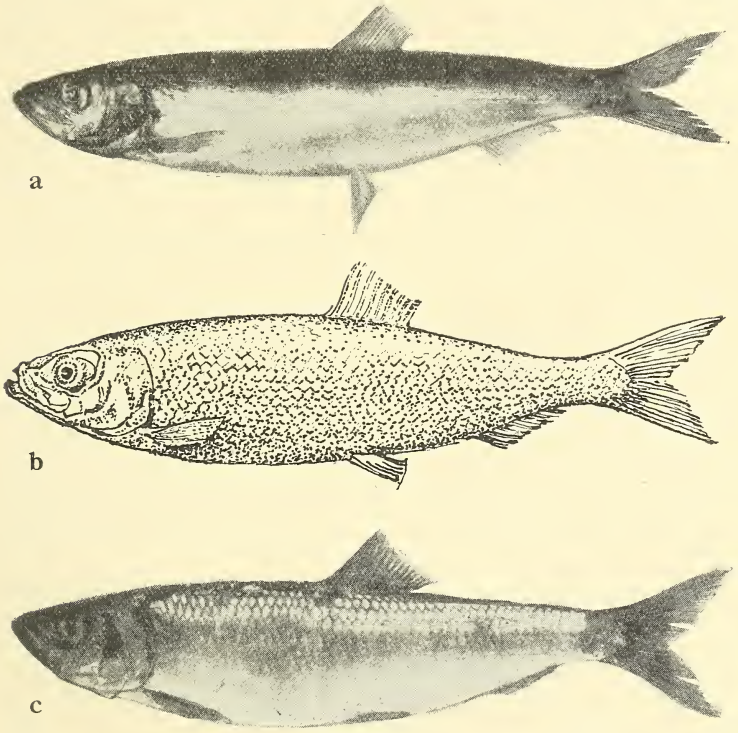


Fig. I.

(a) A Typical Scottish (Summer) Herring. Female 26.5 cm. length.
(b) Herring (*Clupeau Harengus*) Linn.
(c) The Pacific Herring (*Clupea pallassii*).

were no doubt the pioneers of the modern industry. Large boats, known as ' Busses ' were built by them at Hoorn and Enkhinzen in 1416 and used for deep sea fishing. The catches of herring were salted on board the boats near the entrance to the Baltic. Salt herrings as food for Army purposes and for beleaguered towns was of prime importance in the middle ages and many references of purchases are to be found in Army accounts, as well as those of monastries and churches.

The supremacy of the Dutch in the herring industry during the sixteenth and seventeenth centuries is said to have been

largely due to the discovery of William Beukels, of Biervelt, of a special method for preparing herrings for salting. The early rise to weatlh and power of the Hanseatic cities and the prominent position Holland achieved in the middle ages, both as a naval power and as the owner of more than 75 per cent. of the world's shipping, undoubtedly resulted from their having control over the herring industry. The long struggle between this country and Holland during the periods of the Stuart dynasty and the Commonwealth was for the control of the industry in the North Sea, and it may justly be said that this struggle can be deemed to be the genesis of the British navy and the Mercantile Marine.

With regard to Scotland, it is recorded that in 1429 Scottish fishermen caught great quantities of herrings at the mouths of the Dee, Tay, Forth, and Tweed. In 1718 an Act came into force for the branding of herrings, the brand on the barrels being a State guarantee of the nature of the contents.

In 1801 the Government endeavoured to establish a British herring fishery and an Act was passed in 1808 for the further encouragement and better regulation of the British white herring industry—' an object of most essential importance to the wealth and commercial prosperity, as well as to the naval strength of the kingdom.'

The state of the herring fishery gradually progressed and in 1913 the branding act was applied to England and Wales. This particular year was a successful one for the industry, no less than 1,163 Scottish fishing boats taking part in the English fishery and the number of preserved herrings exported to Russia, Germany, and the Mediterranean was enormous. Then came the Great War when most of the fishing grounds were closed and the fish were left more or less to multiply. During this period the neutral countries of Norway, Sweden, Denmark, and Holland reaped a golden harvest, large quantities of salted herring being shipped by them to Germany.

On the termination of the war the condition of the herring industry in the British Isles was most unsatisfactory. Very serious difficulties were encountered, such as high prices of coal, gear, and stores and closed foreign markets. The fisheries of Lowestoft and Yarmouth, the two ports in England where curing is carried out on a large scale, suffered most severely. The distress amongst the Scottish fishermen and women was also deplorable. In 1919 agitation by the Scottish fisheries caused the Government to formulate a scheme for the relief of the industry and so enable fishing to be continued. A guarantee was given to purchase all sound cured herring up to a certain total. Later, the scheme was extended to include the East Anglian fisheries but little improvement

resulted. In 1920 further help by means of subsidies was instituted but this also did not prove a success and the whole plan was eventually abandoned.

In spite of the stoppage of Government help the industry recovered to a certain extent and 1924 was a comparatively good herring year. This improvement, however, was not maintained and the continuance of closed foreign markets and low prices led to further agitation and finally brought matters to a head. In March, 1935, the Herring Industry Act was passed. The Act provides for the establishment of a Board with powers to formulate in consultation with the industry a scheme for the re-organisation, development, and regulation of the herring fisheries.

Life History

CHIEF CHARACTERISTICS.

Nothing excels the beautiful appearance of the common herring when first removed from the sea. It exhibits brilliant golden and bluish-green tints on the back and sides, the portion near the tail showing a delicate dark green shade when held before the light. These bright hues, however, soon fade and the colours change to dark bluish-green on the back and silvery on the sides and belly.

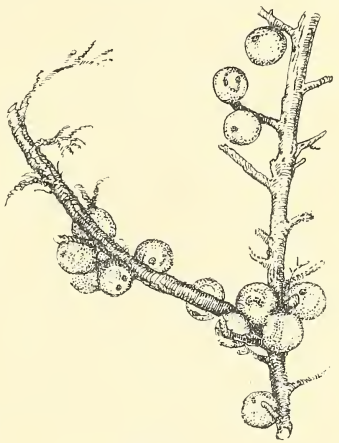


Fig. II.
Eggs of the Common Herring (*Clupeau Herengus*) attached to seaweed. After Ehrenbaum.

The herring is a soft-finned fish of the bony group of fishes, the length ranging from 8 to 15 inches. It is furnished with one dorsal, two pectoral, two pelvic, and one anal-caudal fins. The dorsal fin, which is situated mid-way between the end of the snout and base of tail, is dark grayish in colour fading out to green or blue. The body is compressed, much deeper than thick, fully scaled, with a keel-shaped edge along belly from the head to the forked tail. The spines on the abdomen are short and weak and there is little or no lateral line. The naked head is about one-fifth the length of the body and almost flat on top, but slightly bent towards the nose. The mouth, which is situated near the tip of snout and armed with minute curved teeth, extends to the centre of the eye. The lower jaw is longer than the upper and tipped with black. There are no barbels.

The scales are of moderate size and have a clear lustrous golden colour, but later develop a silvery tinge. They overlap

one another in regular lines, the coarse edges pointing from the head to the tail and are easily detached if the fish is much handled. The loss of a large number of scales may prove fatal. The large eyes are furnished with double eyelids. The iris is silver and white with pupil black and lustrous. There are no internal organs of hearing but a fringed orifice appears before the eye on the inner side of that part of the head covering the gills ; this is probably the hearing organ.

The gills are an important structural feature of the herring and in these the blood is spread out in thin layers for aeration. The openings are protected by covers which are clearly designed to arrest foreign matters that might clog the gills. The convex side of the gills is furnished with fringed fleshy fibres which are bright red in colour when the fish is fresh and healthy. The herring is furnished with a special apparatus for the capture of food consisting of a series of fine combs, termed ' gill rakers ' projecting into the throat from the arches which support the gills. As water is drawn into the mouth it flows over the gill filaments, aerating and purifying the blood, and finally passing out through the opening at the back of the head, the same current serving for respiration and for the supply of food. During its passage small food particles are arrested by the sieve-like rakers, the larger organisms being seized by the small teeth. From the gill rakers the food passes into the stomach, the residue travelling through the gut to the outside.

The internal organs include the oesophagus, heart, stomach, swim-bladder, kidneys, liver, spleen, and intestine. The silvery swim-bladder or sound, is an important organ, situated between the alimentary canal below, and the kidneys and backbone above. It is attached to the head and has two outlets, which are connected to the stomach and near the anus respectively ; these act as safety valves for the liberation of gas, which is generated and regulated by special glands. The chief function of the bladder is to give buoyancy and to maintain balance, thereby enabling the herring to rise from considerable depths to the surface of the water.

The whistling noise sometimes heard when herrings are landed is caused by the escape of gas from their swimming bladder. A careful watch is kept by the fishermen for bursting bubbles of gas on the surface of the water, betraying the presence of a rising shoal of these fish.

There are approximately 370 bones in the body of the herring. The cavity of the belly which terminates at the anal fin has 35 or 36 bones or ribs on each side.

NATURAL ENEMIES.

Probably no fish has more enemies than the herring,

which is entirely lacking in offensive or defensive powers. The eggs and larvae are devoured by cod, hake, pollock, whiting, dogfish, and flounder. The haddock especially haunts the spawning grounds and ' spawny haddocks ' as they are termed are distinguishable from those which have fed normally by exhibiting a characteristic bloom on the skin. Owing to the enormous number of eggs eaten by fish only one in about ten thousand survives to ultimately develop into the adult herring. Salmon, gurnard, ling, dogfish, and coalfish devour myriads of the adult herring and the shoals are sometimes raided by porpoises, dolphins, whales, and seals. Aquatic birds take their toll of the larvae and small herring, especially gulls, guillemots, and solan geese.

FOOD AND FEEDING HABITS.

The diet of the herring, which is a pelagic feeder, includes minute animal and vegetable organisms (termed plankton) floating or swimming in the sea. The plant life which is produced under the influence of the sun's rays is built up from various salts, chiefly phosphates and nitrates dissolved in the water. In the spring there is an immense growth of these plant organisms which in turn promote an increase in the number of pelagic animals, such as copepods and other minute crustaceans. The number or scarcity of these organisms determine the success or failure of a herring brood.

The newly hatched larva subsists upon the yolk-sac for about four days, subsequently feeding upon diatoms, flagellates and the eggs and young stages of crustacea. Later, its food consists of small copepods and larvae and the swimming stages of the common shore barnicle. As the young fish develops (whitebait stage) the diet becomes more varied and it hunts for its food and devours the larger copepods, sand-eels, schizpods, larvae, and the ova of flies and worms. The main article of food of the adult herring is, however, the pelagic crustaceans, calanus, and temora.

Calanus, which is brought to the feeding ground by polar currents, is present in great abundance during the spring and early summer, a period when herrings are feeding. Adult herring usually feed in the afternoon and continue until midnight, a large proportion of the organisms found in their stomachs are said to be phosphorescent. Calanus is rich in oil causing a marked and rapid improvement in the condition of the fish, the oil content, however, shows a reduction during the winter months. Calanus keeps low in the water during the day but tends to rise to the surface at night, corresponding to the vertical movements of herring shoals. When the fish have been feeding largely on Calanus the stomach contents are reddish in colour and the waste discharged from the gut

is accompanied by globules of oil which is believed to account for the patches of oily water regarded by fishermen as indicating the presence of a shoal of herrings.

Adult herring feed continuously in the spring, reaching a maximum in May and gradually decreasing during the summer. From October to December feeding practically ceases. The food reserve of the herring is distributed throughout the body tissues. The fat, which is stored on the outside of the stomach and intestine, breaks down rapidly in warm weather and during the breeding season becomes gradually absorbed and used up in the development of the reproductive elements.

MIGRATION.

Until comparatively recent times the herring was thought to migrate and travel round the British Isles, afterwards making a complicated itinerary in the arctic seas. Observers, however, came to the conclusion that the herring's movements were limited. It is now generally accepted that the fish is more or less sedentary in its habits.

(*To be continued*).

DISTRIBUTION OF *SWARTZIA INCLINATA* EHRH., IN YORKSHIRE

CHRIS. A. CHEETHAM

This moss was added to the Yorkshire lists by R. Barnes from Coatham Marsh, near Redcar, in 1892. He also reported it from damp limestone ledges, Farnham, near Knaresborough, and by the Yore above Wensley Bridge in 1915. I reported it in *The Naturalist*, 1932, p. 220, as very plentiful on a sandy road between Helwith and Dalehead, near Pen-y-ghent, and since then I have found it on the old road between Gearstones (Ribblehead) and Camhouses ; also on the trackway between Clapham and Selside, this being about 1,250 ft. O.D., and the previous two at 1,500 ft. O.D. In March this year I came across another locality where it is very plentiful. This was just beyond Upper Greenfield at the head of Wharfedale, again about 1,250 ft. O.D.

Where I have found this species it is growing on peat or soil which has collected over rock or stony road sides, and it grows in flat, wide-spreading patches, whilst the other species of the genus *S. montana* Lindb. (*Distichium capillaceum* B. and S.) is rarely found away from mountain rocks and crevices, though it is found on the Strid rocks in Bolton Woods and down other rivers as the Ure at Redmire falls, etc.

It seems very likely that the examination of grass-grown stony tracks will show that *S. inclinata* is more widely distributed than it is supposed to be at present.

THE ECLIPSE PLUMAGE OF DRAKES

RICHARD PERRY

Ducks form a race apart from all other species of birds, other than screamers, geese and swans. They differ profoundly in structure, plumage, mentality and habits from other orders.

According to the principles of sexual selection some male birds have evolved saliently beautiful plumages with which to attract the female of the species. Outstanding among these may be cited the upper-covert 'spread' of the peacock. A former British breeding species, the ruff, develops remarkable ear-tufts and a mane for his courtship. In other species the pattern of male and female plumage has evolved similarly, though the male's is usually brighter or more boldly outlined, but it is often impossible to differentiate the sexes by plumage alone; the male bird relying on song or physical display as his medium of courtship.

But there are no species of duck in which the plumages of the sexes are quite similar. We, in the British Isles, are apt to conclude that a close resemblance between the plumages of duck and drake is a rare exception, for we have only one species of which this is true; though even in this instance the brightly plumaged sheld-drake is bigger than the duck, and the swan-like knob on his carmine beak is much larger. But, as it happens, marked differences in the plumages of duck and drake are less common generally over the world than a fairly close similarity. Where, however, the plumage of the drake is notably bright in colour it will be found that the plumage pattern of the duck has been most strictly adhered to by the drake; a brilliant marking on the back of a drake, for example, will be represented by perhaps a darker shade of the duck's prevailing brown. The attractive colour-scheme of the drake has been built up piece by piece from the pattern of the duck. This faithfulness to generic pattern culminates in the extraordinary stencilled plumage of the mandarin drakes, religiously copying the pencilled outlines of the plumage-pattern of the ducks.

There is a distinct parallelism in the colour-evolution of the various species, of which the commonest properties are the wing-slot, or speculum, the plain-coloured head, and the difference in the colour of breast, back and belly. Here and there are individual selective characteristics; the tiny curled feathers of the pintail, the superciliary stripe of the garganey, the curious markings on the head of the teal, the white cheek-spot of the goldeneye, and the crest of the tufted duck; but the pattern-scheme runs true to form in the main essentials; even in the eccentric markings of the rare buffel-headed and harlequin drakes these broad distinctions are observed, and

the plumage-pattern of drake and duck shows a common groundwork.

In many species of ducks this evolution of a bright plumage for purposes of nuptial display and attraction has as its corollary the *Eclipse,* a phenomenon peculiar to this branch of the *Anatidae.* This eclipse may be defined as the assumption by the drake of a plumage, during the simultaneous moulting of the flight-feathers, quite different from his normal one. This means that there will be three moults during the year : an abrasion in spring, when some of the females moult even their down-feathers, the moult of the flight-feathers in the early summer, and the full moult in the late summer.

In many species this eclipse-plumage of the drake is almost identical with the ordinary plumage of the duck : in such drakes as the gadwall the resemblance is complete even down to the colour of the beak, and in the American merganser to the adoption of the female's crest. Apart from the metamorphosis of plumage a phenomenon of the eclipse is that the drake deserts the female and ducklings, and goes into retreat by himself, or with other drakes, from which he does not emerge in correct dress once more, until the late summer, relegating to the duck the whole responsibility for the care and upbringing of the young. As at this season the drakes are unable to fly, and are quite helpless, nature (according to the vast majority of observers) has evolved another of her remarkable protectional devices : the drake replacing his normal bright plumage by a dull, inconspicuous eclipse.

In general—the exceptions we shall note later—there are certain invariable rules connected with the adoption of an eclipse. First, it is peculiar to the drakes of those species, such as the mallard, in which there is a marked difference in the plumage of duck and drake. But the plumage of the drake need not necessarily be brilliant or conspicuous : the brown drake gadwall has an eclipse. Conversely, there is no eclipse when there is no marked distinction in the plumage of the sexes, even in so brightly a coloured species as the British sheld-drake.

Secondly, the eclipse is found almost solely among drakes breeding in the Northern Hemisphere ; American and British ornithologists differ on this point : the former say that no drakes breeding in the Southern Hemisphere have an eclipse, the latter asserting that some do. What is important is that the overwhelming majority of drakes with an eclipse breed north of the equator. Anent this fact, is the remarkable evidence that non-eclipsing drakes of the Southern Hemisphere evolve an eclipse, after a lapse of some years, when domiciled in the Northern Hemisphere. The American cinnamon teal, that breeds both north and south of the equator, is a case in

point. The drake of this species is brilliantly plumaged, almost scarlet in colour, whereas his mate is brown, with the spatulate bill of a shoveller, for the two species are closely related. In North America the drake, true to rule, has an eclipse, but not in South America. Yet drakes of this species transported from south to north eventually evolve one. Australian breeding species act in like manner when brought north of the equator.

Finally, as we have seen, the eclipse is adopted at that season of the year when the drakes of these species are unable to fly, owing to a simultaneous moult of all the flight-feathers, and are therefore defenceless. Hitherto, it has been generally, and easily, accepted that in this defencelessness were to be found the reasons for the adoption of the eclipse, in which the brilliant courting plumage is replaced by a dull inconspicuous pattern that will camouflage the drake while it is growing its new flight-feathers. On the face of it, how plausible is this theory, and yet how disastrously it collapses when examined at all closely, just as the theory of male dominance in courtship collapsed, when it was proved conclusively that it was the dull-plumaged female who finally decided on a mate, and not the brilliant male.

If this adoption of an eclipse is a protective measure, the first thing that strikes the curious is that it is found amongst few (or none ?) of the southern breeding species. Are they not equally in need of protection ? Do conditions of life in the Southern Hemisphere render this form of camouflage, granted to drakes of the Northern Hemisphere, unnecessary south of the equator ?

How is it, too, that the brilliantly plumaged sheld-drake has no eclipse ? It is equally helpless during the moult. It is significant that the sheld-duck is also brightly coloured. The sheld-drake obeys the rule that, conspicuous or not, there is no eclipse among species whose sexes are similarly plumaged. The gadwall drake, inconspicuous but differently plumaged to his mate, is the complementary confirmation of this rule. His plumage cannot well be rendered less conspicuous by his eclipse.

These facts suggest that the protective theory is distinctly vulnerable. Pursuing our investigations further, we then find that the form of protection, as afforded by the eclipse, is not wanted. The brightly-plumaged, eclipsing drakes have adopted precautionary measures that render such protection superfluous. How far will the gunner or ornithologist be able to penetrate into the dense marshes and reed-beds into which the drakes retreat to moult ? And how many drakes will be put up in eclipse ? Almost certainly none ! How many museums of the British Isles possess complete series of skins

or specimens of drakes in eclipse plumage ? Practically none ! At the moulting season the drakes seek sanctuary in the impenetrable fastnesses of the remotest reed-beds. It matters not how conspicuous their plumage, for they are virtually unfindable by man or bird of prey.

Then again, let us assume that the eclipse plumage *is* necessary as a measure of protection. But on examination we find that in many cases it is not only *not* inconspicuous, but that it is often less in harmony with the drake's natural surroundings than its normal plumage. With those drakes that hide in the marshes this would not matter, but consider the pelagic species, who seek sanctuary on the open sea. The beautiful green, white and black plumage of the drake eider blends perfectly with the dark-green troughs and the white crests of the waves. But its eclipse-plumage is of an all-black pattern that renders the bird definitely conspicuous. Only by the utmost wariness at this season, so that no gunner can approach within a mile of him, does the eider counteract the unwelcome advertisement of his moulting dress.

These further facts would seem to damn finally the long-accepted theory that the eclipse plumage is a form of protective colouration, so common in Nature, and at first sight so natural and convenient a solution in this case. For a new, less vulnerable, interpretation of the eclipse we shall have to turn to the distant past, where lie the solutions to all ornithological problems, such as migration, courtship, and the rest.

To the rule that there is invariably an eclipse in those species of the Northern Hemisphere in which the plumage of the sexes is markedly distinct, there is one outstanding exception : the ruddy duck of North America. The plumage of the drake of this species is almost scarlet and very much brighter than the duck's, and his fan-shaped tail is blue and of a somewhat rudimentary nature ; yet there is no eclipse. The significance of this exception to the rule is that the ruddy drake belongs to the family of stiff-tailed ducks, which are among the most primitive of the *Anatidae.*

If we believe in the tenets of sexual selection, we conjecture that differences in the plumage of the sexes have been brought about by the attraction that certain salient points in the plumage of the male birds held for the females, and that these have developed in the course of ages to the mane of the ruff, the fan of the peacock, or, in the present case, to the brilliant plumage of a drake-mallard.

Broadly speaking, the brighter and more marked the difference in the plumage of drake and duck, the more closely the eclipse-plumage reverts to that of the female or immature bird, with the one exception of the primitive ruddy duck, who, as we have seen, has the ordinary sequence of moults and no

trace of an eclipse. Here is a reason accounting for the absence of an eclipse in the brightly-coloured sheld-drake, whose plumage resembles his mate's, and the presence of one in the inconspicuous gadwall, whose dull plumage yet differs from his mate's.

If we advance a stage higher in the scale of evolution to the scoters, in whom the plumage difference between the sexes is not great, we find that either there is no eclipse or else but a slight modification of the normal plumage ; a stage higher to the long-tailed duck, where the distinction between duck and drake is more marked, and the difference between normal and eclipse-plumage is greater ; then to the eider duck, where the sexes are very different, and the eclipse-plumage is dull, and rather darker than the female's ; and finally to the mallard, in which the colour-pattern of the sexes reaches perhaps its widest divergence, and yet, despite this total dissimilarity, the eclipse-plumage resembles that of the duck or the immature male in almost every detail.

Thus then it is reasonable to infer—bearing in mind that the primitive ruddy drake has not yet reached the eclipse stage—that the adoption of an eclipse came after the evolution by the drakes in the Northern Hemisphere of a nuptial plumage distinct from the duller pattern that they originally had shared with the ducks.

The eclipse-plumage is solely a physiological phenomenon : a reversion to type by the drake to its original colour-pattern which was also that of the duck, after the courtship and the mating have taken place, when the specially evolved and striking nuptial plumage, having served its purpose of display and attraction, is no longer required.

The early cessation of all sexual desires, once courtship is at an end and the pairing consummated, and the drain on his virility during the months of display—for the drakes often begin courting in October—added to the physiological effects of the coming moult, impose a severe strain upon the drake's constitution, depressing his vitality to its lowest ebb. It is natural that so fundamental and long-established a physiological practice as the simultaneous shedding of the flight-feathers, in itself a severe operation, should have as its adjunct the adoption by the drake of its original, or very early, plumage-pattern, which is still the suit of the immature male and the duck.

With the weeks of rest and the growth of new flight-feathers, fresh reserves of energy are accumulated in readiness for the full moult, and the assumption once again of the characteristic male plumage.

Thus there are no direct protective qualities attached to this unique eclipse ; it serves no special, vital purpose ; rather is it a natural physiological reversion to original pattern,

apparently connected with residence in the Northern Hemisphere.

There remains this question of the localisation north of the equator of this phenomenon, which is powerful enough to bring about so radical a physiological change in southern drakes hitherto without an eclipse. This is perhaps the most puzzling of all the problems associated with the eclipse. It cannot be purely a matter of climatic influence, because many southern zones have complementary climatic areas north of the equator. And in the Northern Hemisphere the pintail, breeding very much further north than the general run of British mallards, also has an eclipse, which it assumes in July, two months later than the mallard.

There is a sound theory that the Arctic was the original birthplace of all birds, or, at any rate, the vast majority. We know that it was, and is, the breeding centre for countless millions from both Eastern and Western Hemispheres. We think that the seasonal migration northward in the spring of many birds to their breeding-grounds had its origin way back in those ages when recurring glacial eras drove them from their true homes. In the summer when the ice-cap shortened, or at those times when the climate grew more clement, they made persistent attempts to return to their true homes, so that the desire has now become a perpetual habit, no longer primarily dependent on seasonal climatic changes in many species. Indeed migration has probably long since lost its true significance to a large proportion of the myriads whose instincts still respond to its call.

It is most probable that these southern drakes, who will evolve eclipses in the Northern Hemisphere but not in their own homes, were once northern-breeding birds, and the return to a northern domicile again sets in motion the age-old machinery for eclipse, forgotten during their residence south of the equator. Why, we cannot even conjecture with any degree of probability, but as the apparent north and south passage of the sun plays so great a part in the mystery of migration, and since the apparent movements of the sun have an immense effect on animal-life, we can surmise that it is the sun that holds the secret to this other riddle.

The Entomologist for April contains ' An attempt to breed from *Lysandra coridon* Poda, var. *syngrapha* Keff,' by S. G. C. Russell ; ' A list of Lepidoptera from which parasites are particularly desired,' by D. S. Wilkinson ; ' *Gonepteryx rhamni* L., a Note on the larva,' by H. J. Burkill ; ' Some records of British Trichoptera in 1933,' by M. E. Mosely ; ' Notes on Braconidae, XV Microgasterinae,' by C. Morley, and several Notes and observations including ' Diptera in Dumfriesshire,' by J. Murray.

The Naturalist

THE COPPER DEPOSITS OF MIDDLETON TYAS, N. YORKS

DR. A. RAISTRICK, F.G.S., M.I.Min.E.

In any study of North Yorkshire minerals and mining, the ores of lead and iron loom so large, both in bulk and in historic interest, that few people have been disposed to notice the occurrence of copper in sufficient quantity to support a small but thriving industry in the middle eighteenth century. Ores of copper have been noted in many of the lead veins of Swaledale and Wensleydale, but never in a quantity to rank above a mineral curiosity, except in the district around and north-east of Richmond, around Middleton Tyas. As practically all work on these deposits ceased before 1780, they have passed almost into oblivion, although they were of sufficient extent to deserve some record.

The copper deposits occur in a series of very irregular veins of short run, in the Main and Undersett limestones of the Yoredale series, at Middleton Tyas, and at Kneeton, respectively one mile east and one mile north of Scotch Corner on the Great North Road, both lying on the east foot hills of Gatherley Moor, between the Swale and Tees. There are traces of a third small area at Melsonby, where a similar irregular veining occurs, but although traces of copper ores are found, trials made on this spot proved barren.

There is no geological account extant of these ores, but a surprisingly full one may be pieced together from two sources which give a description of the works from a technical point of view. The first source is a series of letters scattered through the MS. letter books of the Newcastle engine builder, William Brown, who in the period 1752 to 1754 was being consulted for the erection of pumping-gear at the Middleton Tyas mines. The series of letters is incomplete, only a few of those from Leo. Hartley, agent at the mine, to Brown being copied into the books, and Brown's replies often being only paraphrased. These letter books are in the MSS. collections of the North-east Institute of Mining Engineers, Newcastle-on-Tyne. The second source is the account of a visit to these mines in 1765, included by Jars in his *Voyages Métallurgiques* (1781, Vol. III, pp. 72-75). If these references are placed in proper order with such other information as is available, a tolerably vivid story is revealed, and a good description of the deposits gleaned incidentally.

In 1765 Jars says that the mines were discovered about thirty years ago, in the process of opening out a limestone quarry. The stone in depth was very much cut up by irregular veins of spar, which were seen occasionally to contain green

copper ore (cuivre verte ou verd de montagne), in irregular patches. Jars' estimate of the age is certainly too great, as other evidence points to the discovery being made about or just before 1750, not as he would suggest, about 1735. In 1750, the Rev. John Mawer opened out the first mine on a very small scale, in the glebe lands, in a field called Goose Hill, south-west of the church. By 1752, two rival companies were mining the area, one with miners imported from Derbyshire, the other mainly with Cornishmen.

In the early months of 1752, Leo. Hartley, as agent and manager of one group of mines, had some correspondence with William Brown, of Newcastle, who had already made a name as a builder and repairer of pumping engines, in the northern coalfield. The subject under discussion seems to have been the pumping of the Middleton mines, as the first letter in the series preserved is from Hartley admitting that the present shaft is too small for the Engine, ' please give dimensions for Engine shaft to take pumps for 2 Engines.'

July 11th, 1752. Wm. Brown, in a letter to an engineering friend, says: ' Went to Yorkshire to see a new discovered copper mine at Middleton Tyas. The float of ore lies 30 yds. broad 15 in. thick at middle but thinner towards the edges. Am building an engine to go by horses. 3 setts of 8 in. pumps 4 ft. stroke 15 strokes a minute. A fire engine would have been best but so far from coals that a Newcastle Chalder [1] would cost 28 shillings and it is thought the mine will not last above three years.' This is the only definite statement we have that the ore occurred in a float or lateral deposit to the main vein. In a fortnight Brown writes to Hartley to ask: ' Will you have pump barrels cast at Newcastle or Coalbrookdale ? at Newcastle cheaper and quicker, at Coalbrookdale are neater made.' In August: ' Iron barrells ordered will weigh 15 cwts. Sent a model 1 in. to 1 ft.' Then follows a lurid note: ' The Cornish and Derbyshire miners have robbed one another and there are great feuds, they threaten to blow one another up with gunpowder.'

January 21st, 1753. ' Pumps, etc., are fixed and working well. 3 setts 8 in. pumps 50 in. stoke lift 9 fathoms 15 strokes a minute.'

March 4th, 1753. ' Cornish and Derbyshire miners are mostly dispersed. Tissington [manager of the rival mine] men doing little but try fresh places and smelt what they've got. Heavy floods have watered the mines and another engine is needed, so order the ironwork. The ore has been assayed and produced 14 cwts. malleable copper from 21 cwts. ore. Tissingtons have laid out £500 for convenience of smelting

[1] Newcastle measure of coal—given in 1800 as 2 tons 13 cwts.

the ore. Have two furnaces and burn 16 to 18 tons a week at 6d. a bushel for coal. Their shafts have mainly run.' Leo. Hartley.

March 28th, 1753. 'Tissington offered to build me a fire engine in exchange for a way to the Churchyard.' A later letter asked Brown to give an estimate for building a 'fire engine' to cope with the water, and his reply is a valuable document on the construction and proportions of the early pre-Watt steam engine.

June 29th, 1753. 'By a calculation I find that an Engine whose Cylender is 42 ins. will work 3 Three Sett of Pumps of 12 Inches Diameters and 12 Fathoms Deep and at a moderate way of Working will Draw about Twelve Hundred Hogsheads of Water Wine measure in an hour which is full Three times as much as your Horse Engine can draw when your Horses go a pritty good pace. If you think that will do for you could wish to have a Regulatoring Beam [the main beam of the engine] at least 30 Inches Deep and 24 Inches thick and 30 foot Long if possible to be got that Length, my Reason for having it so long is I Design to make my stroke 2 foot longer than usual Two Cylender Beams at 24 Inch square and 23 Foot long each as soon as possible could wish to hear if you can gett such three Trees and in the meantime will be enquiring about a Cylender and Working Pieces but before I gave orders for them Desires to know if you think a Cylender of 42 Inches be Large Enough A Boyler to serve such a Cylender will Require about 20 Bolls of Coales a Day which 20 Bolls I find will be $7\frac{1}{2}$ of your Quarters and as you say they cost you 2s. 6d. p. qr. your daily Expence of Coales will be 18s. 9d. if as Obligd to work the Engine constant, but if can stand nigh half your time will greatly lessen your Expence of Coales there will be several pieces of Oak Timber wanting besides the Beams but as they are not very bulky I apprehend they may be gott with no great difficulty I cannot exactly give the Dimentions of the pieces until I know the True Length you get the Regulating Beam.'

Wm. Brown.

Hartley thought a 40 in. cylinder would do, and Brown proceeded on that basis.

August 5th, 1753.

Iron pumps will cost £5 10s. a fath. in Newcastle.
Wood pumps hoop'd £2 2s.

'Iron pumps can be sold near the original cost, wood pumps not so iron are really cheaper in the end. Get a Smith's shop ready with 2 Fireplaces. As soon as ready will begin to make the chains, screwbolts, and spear plates. Will send two smiths to make the boiler.'

In reply Hartley writes that Tissington is to rush up a Fire Engine at once, so decides not to proceed with Brown's engine. In December, Tissington's cylinder arrived by sea voyage at Stockton and by May, 1754, the engine is nearing completion. (48 in. cyl. 20 in. pumps, 80 hogshead boiler.)

In June, Hartley is getting sufficient ore to build a smelt mill, and is sending out his men to make trials all over the district, but reports later to Brown that the trials have failed to pay for themselves, at Melsonby, Kneeton, Layton, Forest, Feldom, Richmond, and Sleddale near Keld in Swaledale. In the course of correspondence about the pumping shafts it is made clear that the usual shaft is a very crude affair, mostly following the vein, and not true enough to carry pump rods. The next notice is by Jars in 1765, who finds the fire engine at work, but the production past its best, and now rapidly declining. He notes that the mines are very small and irregular, and ought rather to be called fox-earths, than mines (ce sont plutôt des trous à renard que des ouvertures de mines, mais on ne sauroit trop blâmer les ouvriers qui doivent éviter toute dépense inutile à leur entreprise actuelle). Shafts are never more than 3 ft. 6 in. square, and galleries as small as possible, going in all directions following irregular veins and strings of ore. He gives most attention, of course, to the processes of smelting, but notes that the ores produced are malachite, grey copper ore, peacock ore (cuivre de gorge de pigeon), with occasionally some yellow ore. Native copper lumps occur some times. The whole of these ores, except the pure copper, are pounded together, and washed and separated exactly as are the lead ores in Derbyshire, and this results in much loss of the malachite. The crushed and washed ore, mixed with matte from a previous smelting and with some slag, is smelted in a reverberatory furnace, like the one described by Schlutter. This is the furnace credited by Schlutter to Dr. Wright, who was smelting at Gadlis, Flintshire, in the London Lead Company's works.[1] The smelted copper is sent to Derbyshire to be refined. A furnace charge is 4 or 5 quintals of ores and matte, and produces 1 quintal copper and 1 quintal matte, which is returned to the next smelting. 26 to 30 quintals of coal are needed to smelt this charge, and the scoria (slag) produced is crushed and washed, and some copper recovered from it in the form of small granules.

Jars notes that the ore occurs in rounded and very irregular masses, often in cavities more or less filled with a ferruginous sand. The constant testimony of Hartley to the irregularity of working and the very varied shape and size of galleries, etc., bears out all that Jars says about the ore body.

[1] See Raistrick, A., The London Lead Co., 1692—1905. *Trans. Newcomen Soc.*, vol. xiv, pp. 119—162, 1934.

The venture terminated some time after the visit paid by Jars, and by 1800 it was possible for a writer to describe the industry as one that flourished some time ago, and is then represented mainly by traces of mounds, and fire-burned stones from the furnaces. Jars has a note that the furnaces were built of a local sandstone, ' une espece de grès tendre qui résiste au feu ; son sol (the floor of the furnace) est fait avec les mêmes pierres dont les joints sount bouchés avec de l'argile.' These are evidently some of the Yoredale flags, so widely used in the Dales as bakestones (as witness the popularity of Bakestone or Baxton Edge and Gill, etc., as a place-name, always on the outcrop of one of these thin resistant flagstones). In the village of Middleton Tyas, until recently, the engine house erected by Tissington was standing at the south-east end of the church-yard, against the stream, with a group of houses in the village called Smelt Mill houses, and the ruins and mounds of the old smelt mill itself, just outside the village on Cow Lane.

In Memoriam

SAMUEL CLOUGH, J.P.

We regret to record the death of Samuel Clough, J.P., of Steeton Hall, on November 26th, 1935, at the age of 71. He was a life member of the Y.N.U., elected in 1906. His love of birds and the workings of Nature was not so much on the scientific side as from the point of view of a gentleman farmer. He was particularly interested in his rooks and rookeries, which practically surrounded Steeton Hall, and on the second Sunday in April of each year he almost religiously counted the number of nests. During the Great War the West Riding County Council asked him to try to reduce the number of rooks, owing to complaints by farmers of damage done. He had all their eggs collected in April, 1918, and he sent a Report of the results to *The Naturalist* for 1918 (pp. 237-8), which was his only contribution to our journal.

In business circles, Samuel Clough was well and widely known, and was greatly respected. He was head of the old established firm of John Clough & Sons, Worsted Spinners and Manufacturers, of Steeton. He was twice Mayor of Keighley (1910 to 1912), and President of the Keighley Chamber of Commerce for four years. In 1903 Mr. and Mrs. Clough equipped a new operating theatre in Keighley Victoria Hospital at a cost of £300.

He leaves a widow and one son (Capt. S. H. Clough, who was very badly wounded in the War) and one daughter.—H.B.B.

1936 May 1

RECORDS

COLEOPTERA

Having submitted some recent captures of Coleoptera to my father, H. Britten, F.R.E.S., The Museum, Victoria University, Manchester, many interesting species have been determined, among which are three species new to Yorkshire, one new to North-East Yorkshire (V.C. 62), and one interesting foreign species. Dr. W. J. Fordham, M.R.C.S., Barmby Moor, York, has very kindly supplied me with the information of the distribution of the three additions to the County. The use of a dagger indicates a new County record, while an asterisk indicates a Vice-County record.

†*Athera hybrida* Shp. (Rare.) East Row, 19/3/36. N.B. This rare species was discovered in moss brought home by Mrs. Britten. It has previously been recorded from Scotland and Cumberland.

†*Clambus punctulum* Bc. (Rare.) Skelder, 20/3/36. H.B. This rare beetle was obtained by sifting sphagnum moss. Previous records are from Cumberland, Lancashire, and Cheshire.

†*Abomaria abra* Hb. (Rare.) Skelder, 20/3/36. H.B. Like the previous species, obtained in sphagnum. Previously recorded from Cumberland, Northumberland, Durham, and Notts.

**Cryptophagus umbratus* Er. Whitby, 16/2/36. H.B. Obtained while sifting decayed vegetable matter. This beetle is given as rare in Yorkshire.

Ancistrosoma trivitatis A.M. Whitby, 11/1/36. P. Burnett. This beetle is a native of Trinidad. It was found in a cup of coffee, probably introduced in brown sugar, the insect being dead when discovered. It has no claim to be included in the British List, and is only placed on record as a matter of interest.—H. Britten.

UNCOMMON FISHES IN THE SCARBOROUGH DISTRICT

On December 30th, 1935, a fine example of the Short Sunfish (*Orthagoriscus mola*) was washed ashore at Filey, dead, but quite fresh. It was seen by Mr. T. Hyde-Parker, who kindly sent me a sketch and measurements of the fish. Its length from tail to tip of nose was 3 ft. 10 in., depth from tip to tip of dorsal and anal fin 5 ft. 1 in., thickness of body 6 in., thickness of head nearly 9 in. It was secured by a Filey resident who hoped to be able to preserve it.

On January 3rd, 1936, I saw upon the Scarborough fish market an hermaphrodite cod containing both roe and milt. Such examples are not very uncommon.

On January 23rd, 1936, a small Sturgeon measuring 4 ft. in length was caught by the motor boat *Just Reward* (Skipper, J. W. Colling). Sturgeon are not very uncommon in the trawl nets, but this example was caught on a baited hook on a long line, and is the only instance with which I am acquainted where one of these fish has been captured in such a way, nor did any of the local fishermen remember a similar

occurrence. The bait taken was a Dahlia Anemone, locally known by the fishermen as a ' doodle ' or ' scarry.'

Another Sturgeon, 5 ft. long, was taken in the nets of the s.t. *Persian Empire* on January 30th, 1936.

A migration of Twaite Shads (*Clupea finta*) occurred during February, 1936. The first was taken on February 10th and measured 14 in. in length. On the following day a 12-in. specimen was found in the stomach of a large cod. Others occurred on the following dates : February 12th—one, 12 in. long ; February 15th—twenty-four, from 12 to 16 in. in length ; February 17th—eight, about the same size ; February 20th—three, 12½ to 16½ in. in length ; March 9th—one, 17 in. long. All the fish were taken in the trawl net and no more have been seen since. A single specimen of the Allis Shad (*Clupea alosa*) was also trawled on February 17th, 1936.—W. J. Clarke.

MIGRATING RED-LEGGED PARTRIDGES NEAR SCARBOROUGH

As is commonly the case at this season of the year a good many examples of the Red-legged Partridge (*Alectoris r. rufa*, L.) have been found in an exhausted condition on the coast near Scarborough during the last month or so, the latest example being captured alive on the South Sands at Scarborough on April 2nd. In some cases the birds have been seen approaching the coast while still several miles from land, and they not uncommonly fall into the water, tired out, before reaching the shore.

These apparent spring migrations are very puzzling. The species is said not to be a migratory one, and in any case there is no part of the European continent, adjacent to the Yorkshire coast, in which the bird is a regular inhabitant, for it is said to be unknown in Scandinavia and Northern Germany. Yet these visitations occur regularly every spring, some times in considerable numbers. It has been said that they are due to birds which have flown out to sea from our own shores and are attempting to return to the place from whence they started. On the other hand, Dr. N. F. Ticehurst expressed the opinion ' that occasional birds, or coveys, do wander across,' and believes that the early records of the bird in Kent cannot be explained by spread from any area of introduction. This, I think, must also be the case with the Yorkshire birds, for in this district the Red-legged Partridge is not an abundant species, but from whence the immigration starts is at present a mystery.—W. J. Clarke.

OMMASTREPHES SAGITTATUS AT SCARBOROUGH

On Thursday, March 19th, as the ' Jolly Rogers ' party of early morning bathers were taking their dip, they saw a

squid come ashore on the South Sands at Scarborough and secured it while still alive. It was brought to me shortly afterwards and proved to be a small example, about 2 ft. in length, of the ' flying squid ' of the fishermen, so called owing to their habit of leaping out of the water while swimming near the surface.

O. Sagittatus is the commonest of the larger species of squids which occur on the Yorkshire coast and a good many have been recorded in recent years. When full grown it may reach a length of 5 ft. or 6 ft. The fishermen say they are no use for bait, although large numbers of the common squid are used with success for this purpose.—W. J. Clarke.

REDWING AND CHIFFCHAFF

On March 28th, 1936, perhaps the first warm sunny day of the present spring, in a small wood near Tickhill (South Yorkshire) several redwings sang more fully than I had previously heard the species to sing in England. They used the four ringing, rhythmic, descending notes (often delivered in pairs), but without the warble which frequently follows those notes in Scandinavia. Mingled with the songs of the redwings was that of a newly-arrived chiffchaff—the voices forming a blend which was new to me.—Ralph Chislett.

REVIEWS AND BOOK NOTICES

How to Know British Birds, by **Norman H. Joy, M.R.C.S., M.B.O.U., F.R.E.S.,** pp. 136, with 40 plates containing nearly 300 illustrations, many in colour. Bird-lovers' Manuals, 5/-. (Witherby). For its price this is the best bird identification book we have seen for many years. To most beginners, the recognition of wild birds presents many difficulties and the usual book descriptions are not entirely helpful. In the field, birds are not recognised so much by detail in colour and markings as by characteristic shape and action, and by cries and songs. Dr. Joy has, in this handy little book, supplied the absolute novice with a really reliable guide. There are scores of clever ' thumbnail ' sketches which bring out just those points one should look for. Where colour provides a definite clue to identity, the appropriate illustration is accurately coloured. We have tested this book in the field and can recommend it whole-heartedly to all who contemplate taking up the study of birds seriously.

Birds of the Green Belt and the Country Round London, by **R. M. Lockley,** pp. xx+236, with plates and sketches by Doris Lockley. Bird-lovers' Manuals 5/-. (Witherby). London is now assured of its ' green belt ' for all time, but even if this were not so, Mr. Lockley's book would be a welcome addition to bird literature. The extreme limits of the area dealt with are within an hour's rail journey from London, and where suitable cover is available the avifauna of the area is as rich as that of any in Great Britain. The book is divided into chapters based on

ecological considerations, so that one chapter deals with forests, the next the chalk country, and so on. Sewage Farms and Reservoirs deservedly have a chapter each, there is an index of the birds described and a very full transport guide. Mr. Lockley gives much useful advice on equipment. He recommends binoculars of 8x magnification rather than 6x. We are inclined to agree, provided the glasses purchased are of absolutely first-rate quality. A comparatively cheap pair of 6x are better than most of the low-priced 8x. The best quality of the latter cost anything from £12 to £15, whereas a useful 6x can be obtained for as low as £3/10. On p. xvii, line 26, the words ' half as cheap ' should surely read ' half the price.'

The Birds of the Firth of Clyde, by **John Morell McWilliam,** pp. 164, with 10 illustrations and a map, 12/6. (Witherby). Instead of using the rather unsatisfactory watershed boundaries of some of the works on local Scottish fauna, Mr. McWilliam includes in this volume, descriptions of bird life of the whole of Ayrshire, Renfrewshire, Buteshire, Dumbartonshire, and the southern part of Argyllshire. The work covers that part of Argyllshire omitted by Harvie-Brown and Buckley, and omits the Argyllshire Hebrides. Mr. McWilliam brings up-to-date the facts relating to the distribution of birds in a very interesting area. The author regards this volume as a sequel to his earlier work **The Birds of the Island of Bute** (Witherby, 1927), and readers are also assumed to have access to Messrs. Paton and Pike's **The Birds of Ayrshire** (Witherby, 1929). Having these points in mind the volume under review is a satisfactory statement of the present position of the birds of the area dealt with. The entries under most species are very short, but the essential facts are given. There is a good bibliography and among the illustrations there are some really excellent infra-red photographs of typical scenery.

Glimpses of the Wild, an Observer's Notes and Anecdotes upon the Wild Life of Assam, by **Lieut.-Col. H. S. Wood, I.M.S.,** pp. 180, with colour and monochrome plates, 8/6. (Witherby). Here are a large number of interesting stories of the animals, birds, reptiles and insects of Assam. The book does not profess to be scientific, but the author is a keen observer and has made many valuable observations, and he writes in an entertaining way. It is rather a pity that the proof-reading was not done more thoroughly. In quite a number of cases the author's meaning is completely obscured. One sentence (p. 48, 5 lines from bottom) reads : ' So types destroy everything and make the face of nature hideous.' The word ' also ' appears more than once without any apparent reason.

Tropical Fishes and Home Aquaria, by **Alfred Morgan,** pp. viii+254, with numerous photographs and drawings by the author, 8/6. (Rich and Cowan). This useful manual comes along at a very appropriate time. Recently there has been a large increase in the number of people who try to keep live fish under proper conditions. It is now fairly generally known that even the long-suffering gold-fish is not happy in a small clear-glass bowl of water, placed in a sunny window. A well-balanced aquarium is not difficult to set up and Mr. Morgan in his book goes into great detail. He deals in the main with tropical fish which require a certain amount of artificial heat, carefully controlled. It will be an easy matter to run such an aquarium with the aid of a book like this which should be accorded a cordial welcome by all aquarists. The work is an American production as will soon become apparent to English readers. It is curious that the contents page says that the preface is by Willard Huntington Wright, while at the head of the preface itself appears the name S. S. Van Dine.

1936 May 1

NEWS FROM THE MAGAZINES

The Entomologist's Record for April contains 'Effects of the temperature on the developments of *Pieris brassicæ* L.,' by O. Querci; 'Some Cumberland Sawflies,' by T. F. Marriner; 'Scope for our Orthopterists,' by M. Burr (a very suggestive paper shewing how much remains to be done in the order); several notes on collecting and current notes and short notices and supplement; 'The British Noctuæ and their varieties,' by H. J. Turner.

The Entomologist's Monthly Magazine for April contains 'Systematic Notes upon British Aquatic Coleoptera, Part X. Haliplidae. (*Peltodytes, Haliplus,* and *Brychius*)" by F. Balfour-Browne; 'Coleoptera in West Cornwall, with a Note on the addition of *Trogophloeus despectus* Baudi to the British list,' by R. T. Bannister; 'Further Notes on the Neuroptera (Sens. Linn.) of Kintyre,' by K. J. Morton; 'Notes on British Metopiini (Hym. Ichneumonidae),' by J. F. Perkins; 'Collembola from Grimsey Island, North Iceland,' by W. M. Davies; 'Lymantriidae from North Yunnan,' by C. L. Collenette; 'A Check List of the Hippoboscidae and Nycteribiidae parasitic on British birds and mammals,' by G. B. Thompson; 'Mallophaga on a bird's egg,' by G. B. Thompson, and 'Dumfriesshire Hemiptera-Heteroptera,' by J. Murray.

The Journal of the Society for British Entomology, Vol. I, Part V, contains numerous interesting articles. There are thirty-one notes in all including a description of the chalcid *Petiolaria anomala* Bl. and Kr. from the New Forest and Denmark with a plate of the female. This insect is a parasite of insect eggs on grass and low herbage. Almost all orders of insects are included in the notes including nine Notes on Lepidoptera, four on Odonata, and five on aculeate Hymenoptera. Articles worthy of special mention are '*Epistrophe balteata* de Geer. (Dipt. Syrph) hibernating,' by J. W. Allen; 'Further Note on the possible occurrence of *Ecdynurus forcipula* (Pict.) (Ephem.) in Britain,' by J. M. Brown (Rivers Bradford and Dove, Derbyshire, and Dent, Ripon, and Malham, Yorkshire); 'Synonymic Notes on the genera *Chloroperla, Isopteryx,* and *Isoperla* (Plecoptera) with a list of the British species of *Chloroperla,*' by D. E. Kimmins (with plate); 'Miscellaneous records of Parasitism, II,' by G. Salt; 'A Note on some Hymenoptera bred from a dead willow,' by E. Mc. Callan (*Pemphredon lugubris* with *Omalus auratus* and *Coelocrabro ambiguus* with *Habritys brevicornis* and *Demopheles caliginosus*); 'List of insects found near Aviemore, Inverness-shire, from June 20th to July 2nd, 1933,' by F. H. Haines (nearly all orders of insects including about 200 species of Diptera and 66 Ichneumonidae), and 'Honeycombs as a bait for moths,' by H. L. Andrews (listing 78 species).

Science Progress for April (Vol. XXX, No. 120) contains :—'The Control of Differentiation,' by Professor H. H. Dixon; 'Birds Do Attack Butterflies,' by Professor G. D. Hale Carpenter; and 'Vernalisation,' by J. R. Thompson. There are the usual full references to Recent Advances in Science, while the essay reviews are of more than usual interest. These are as follows :—

'The Living Garden,' by Sir Arthur Hill, M.A., Sc.D., F.R.S. Being a Review of *The Living Garden,* by E. J. Salisbury.

'Science in Baghdad in the Ninth Century,' by Professor J. R. Partington, M.B.E., D.Sc. Being a Review of *The Book of Treasures of Job Edessa*; edited and translated by A. Mingana.

'The Cranial Muscles of Vertebrates,' by G. R. De Beer, M.A., D.Sc. Being a Review of *The Cranial Muscles of Vertebrates,* by F. H. Edgeworth.

'Translocation in Plants,' by Professor H. H. Dixon, Sc.D., F.R.S. Being a Review of *The Translocation of Solutes in Plants,* by O. F. Curtis.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. Blair, B.Sc., F.R.E.S. — R. W. Lloyd, F.R.E.S.
H. G. Champion, M.A., F.R.E.S. — F. Laing, M.A., B.Sc., F.R.E.S.
J. E. Collin, F.R.E.S. — H. Scott, M.A., Sc.D., F.L.S.
J. J. Walker, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

NATHANIEL LLOYD & CO., LTD., BURRELL STREET, LONDON, S.E.1.

BRITISH BIRDS

AN ILLUSTRATED MONTHLY MAGAZINE

Edited by H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., H.F.A.O.U.;
Assisted by Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., F.Z.S., and N. F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

A complete current History of British Birds

ARTICLES **NOTES**
CORRESPONDENCE **REVIEWS**

Beautifully illustrated with Photographic and other Plates

ANNUAL SUBSCRIPTION, 20/- POST FREE; MONTHLY, 1/9 NET.
Specimen Plates with List of Contents post free.

London: H. F. & G. WITHERBY, 326, High Holborn.

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. Eagle Clarke, F.R.S.E., and F. Boyes.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. Fortune, F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

London: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C. 4.
And at Hull.

COLLECTING APPARATUS.

Nets.	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post-free 4/-.

A story that faithfully depicts the characteristics of Yorkshire folk, their wit, their capacity for driving a hard bargain, their love of the moors and sea and (for the time is a hundred years ago) their passionate love of smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Happy love and terrible tragedy are intermingled, the whole being relieved by humorous incidents, some of which take place at Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,
5 Farringdon Avenue, London, E.C.4.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.
Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.
Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.SC., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.SC., F.R.S.E.; ANDERSON FERGUSSON, F.R.E.S.; A. R. WATERSTON, B.SC.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, Ltd., at 5 Farringdon Avenue, in the City of London.
May, 1936.

JUNE, 1936

No. 953
No. 726 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

SMITHSONIAN INSTITUTION
JUN 19 1936
NATIONAL MUSEUM

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

	PAGE
The Common Herring (*illustrated*)—*Elliot B. Dewberry, M.R.I.P.H., M.R.San.I.* (*Concluded*)	121-129
Some Early Diptera—*Chris. A. Cheetham*	129
The Distribution of *Tetraphis Browniana* Grev., in Cheshire and in Staffordshire—*T. H. B. Bedford*	130
Gibberella saubinetii—*T. Petch*	130
The Butterflies of the Huddersfield District—*W. E. L. Wattam*	131-132
Some More Insect Jacobites—*W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.*	132
In Memoriam:—F. A. Mason, F.R.M.S. (*portrait*)—*W.H.P.*	133-134
List of Members of Y.N.U.—*correction*	134
Yorkshire Psocoptera—*James M. Brown, B.Sc., F.L.S., F.R.E.S.*	135-139
British Species of *Odynerus*—*H. Parry Jones, F.R.E.S.*	139
Records	140-142
Reviews and Book Notices	143-144
News from the Magazines	144
Illustrations	123, 125, 133

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription 15/- per annum.

YORKSHIRE NATURALISTS' UNION

ENTOMOLOGICAL AND PLANT GALLS SECTIONS

Excursion to Aberford on Saturday, June 20th

THE Annual Excursion will be held in conjunction with the above Field Meeting of the Union. Details of meeting place, conveyance, etc., will be found in the circular.

W. D. HINCKS,
Hon. Secretary.

46 Gipton Wood Avenue,
Leeds 8.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post-free 4/-.

A story that faithfully depicts the characteristics of Yorkshire folk, their wit, their capacity for driving a hard bargain, their love of the moors and sea and (for the time is a hundred years ago) their passionate love of smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Happy love and terrible tragedy are intermingled, the whole being relieved by humorous incidents, some of which take place at Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,
5 Farringdon Avenue, London, E.C.4.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

THE COMMON HERRING

(*Clupea harengus* Linn.)

ELLIOT B. DEWBERRY, M.R.I.P.H., M.R.SAN.I.

(*Continued from page* 104)

Breeding and Development

SPAWNING.

In the spring herrings spawn near the Scottish coast—Firth of Forth, off Cape Wrath, the Hebrides, and also along the west coast of Norway and in the Skaggerak. From August to October spawning occurs off the north and east coast of Scotland and on the English coast from Northumberland down to the Wash. In winter the spawning grounds are situated in the vicinity of the Sandettie lightship and the Gabbards. In January and February spawning takes place off Cap d'Antifer, in the eastern part of the English Channel and along the Devon and Cornish coasts.

Under the Herring Industry Act of 1935 the Herring Board closed the Dowsing spawning area from 12th August to 30th September. This area lies about twenty miles from the coast of Lincolnshire, between Grimsby and Skegness. It includes the shallow waters on the outer Dowsing, East Dudgeon and Cromer Knoll.

The selection of a spawning ground is governed by the temperature and the nature of the sea bed, the depth varying from 20 to 40 fathoms. The most favoured grounds are those having a fairly hard, clean surface, such as gravel or sand mixed with shells. A muddy or shifting sea floor is always avoided. Favourite sites are coastal banks and slopes in comparatively shallow water, but the depth varies in different situations.

The minute globular opaque eggs (hard roe) each from 0·92 to 1·5 m.m. in diameter are deposited at intervals by the female, in clusters or masses numbering from 21,000 to 48,000. They become attached to the sea bed or to seaweed by the hardening of their mucilaginous surface coatings and are fertilised by the milt (soft roe) extruded by the male herring. The quantity of milt is so large that it forms a dense greenish-white cloud in the sea, sometimes a mile long. Fertilisation is accomplished by the milt entering an opening in the egg capsule termed the ' micropyle.' The development of the egg is usually rapid, but this depends upon the temperature and the salinity of the water. By the second day the embryo nearly reaches three-quarters of the way round the yolk, from which it derives its nourishment. About the fourth day the larva shows signs of life and can be seen wriggling

inside the egg membrane until it finally breaks through and passes into the water.

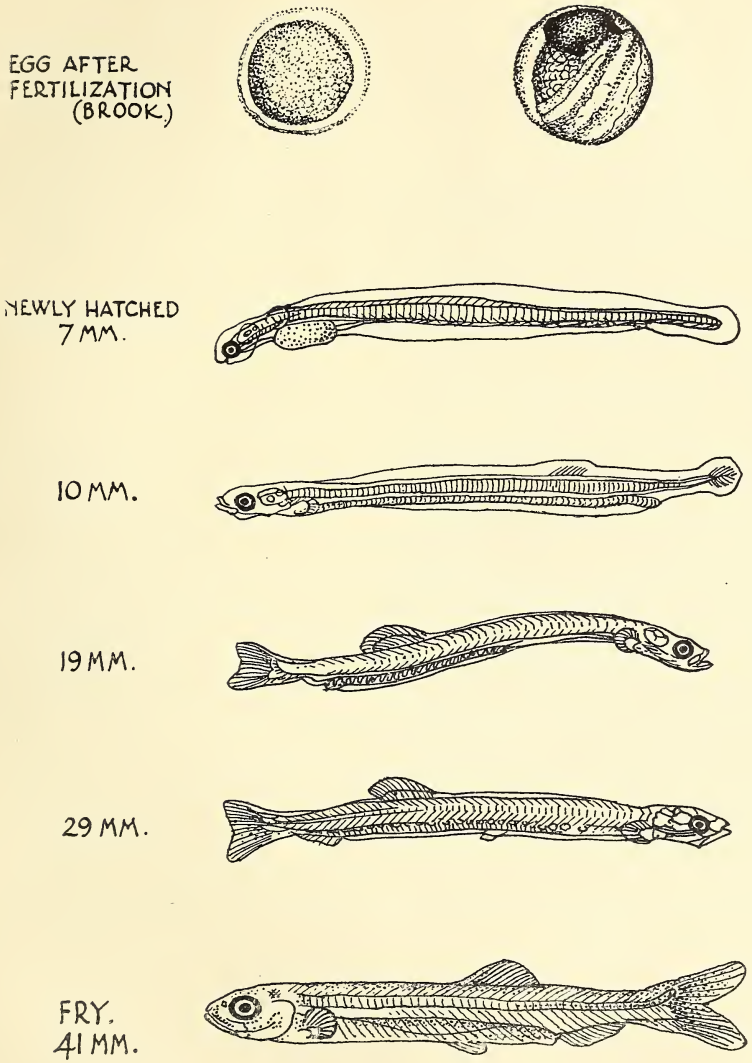
A number of experiments carried out to determine the relationship between temperature and duration of the incubation period show the following results :—

Temperature.	*Incubation Period.*
14 — 19°C	6 to 8 days.
10 — 12°C	11 days
5 — 6°C	18 to 21 days.

The newly hatched larva is slender, transparent and about $\frac{1}{4}$ inch long. The eyes are black, jaws undeveloped, gill slits open but there are no gill covers. The unabsorbed yolk-sac is carried beneath the abdomen and the gut extends nearly the whole length of the body. During this early period the larva is incapable of individual movement and is consequently an easy prey to a host of enemies. Large numbers also die through lack of suitable food.

After absorption of the yolk the jaws develop and the larva seeks food. When about $\frac{5}{8}$ inch in length fine rays appear in the tail and middle of back, and the dorsal, ventral and pelvic fins develop. The important physical changes, however, take place at the ages of $2\frac{1}{2}$ to $3\frac{1}{2}$ months ($1\frac{4}{5}$ to 2 inches in length). There is growth and thickness of the body, the scales develop as tiny pockets along the middle line and a silvery sheen appears on the skin. The swim bladder can be seen, the gut shortens and the young herring takes on the appearance of the adult. This is known as the ' whitebait ' stage. The rate of growth is extremely variable and determined by the temperature of the water, the nature of the food and the season in which the brood is hatched.

Investigations have been carried out by the Ministry of Fisheries regarding the movements of herring larvæ. By studying the speeds and directions of the sea currents and force of prevailing winds, using drift bottles and indicators, it has been found possible to approximately calculate the direction taken by a brood of herrings on leaving the spawning grounds. The young herring now frequent shallow coastal waters and estuaries such as the Wash, Morecombe Bay and the Thames, where they remain until they are about 12 to 18 months old ($3\frac{1}{2}$ to 6 inches long). They then migrate to deeper waters and at two years old (6 to 9 inches long) are found in the shallower parts of the North Sea, in the vicinity of banks, such as the Dogger Bank. Here they feed and grow rapidly and build up the supplies of fat necessary for the ripening of the reproductive organs. In the spring and early summer of their third year, all have left the estuaries and bays and become incorporated into the



LAVAL STAGES OF THE COMMON HERRING. (CLUPEA HARENGUS). AFTER EHRENBAUM.

Fig. III.

shoals of older herring (4 to 9 years) which have migrated from the deep sea to the shallow coastal waters to spawn. Maturity, which is accompanied by a decrease in rate of growth, differs in the various seas. North Sea herrings mature in the third or fourth year, and are then approximately 9 to 10½ inches in length ; but in Norway, maturity is not reached until the fifth to the eighth year. It is quite impossible to tell the age of herring by their size alone. A fish 11 inches long would be large for the southern North Sea, but a length of 13 inches is common in Norwegian waters, whilst mature herrings 4 inches long are found in the Baltic Sea.

H. Wood gives the growth of the herring of Scottish north-east coast, as follows :—

	1	2	3	4	5	6 years.
Mean Size (inches)	4¾	7¼	9½	10¼	10¾	11

According to Hodgson, winter spawned herrings for the first four years of their life are 3⅕, 6$\frac{3}{10}$, 8⅕, and 9⅕ inches respectively.

There are two main groups of herring in British waters, one group spawning in the autumn, and the other in winter and in spring. The autumn spawners live in the open sea, in water of medium or high salinity, but the spring spawners prefer water of medium or low salinity. After spawning the ' spent ' fish, which are in a weak condition, quickly leave the spawning grounds and drift passively with the currents. Those which spawn near the north-east coast of France (Cap d'Antifer) *i.e.* the Lowestoft and Yarmouth herring, are eventually carried back to the North Sea, following a route near the Belgian coast. Recovering ' spents ' are caught off Lowestoft in March and April. The spent herrings of the Scottish coast tend to move eastward. They do not frequent coastal areas in large numbers until a subsequent spawning season, their main habitat being now in the deeper parts of the North Sea.

Herring Races

AUTUMN HERRING.

The herring of the southern North Sea inhabiting the waters south of the Dogger Bank.

THE SCOTTISH HERRING.

These are caught off the Shetlands, and later off the main Scottish and English coasts, down to the Dogger Bank.

The herring of the Norwegian Skager Rack coast and Jutland Bank, an eastern variety of the northern North Sea herring.

The herring of the Cattegat and Baltic, and the herring of Iceland.

SPRING HERRING.

The herring of the southern North Sea. These are caught in estuaries of the Elbe, Weser and Ems and in the Zeider Zee.

The herring of the northern North Sea and Skager Rack. These include fish from the Clyde, Firth of Forth, and also the noted herring from Loch Fynn.

The herring of the Limfiord, the Belt, and the western Baltic.

The herring of the eastern Baltic (Strömling).

In addition to the above there are the herring of the White Sea, the Irish Sea, and that of the Hebrides and also the American and Pacific herring.

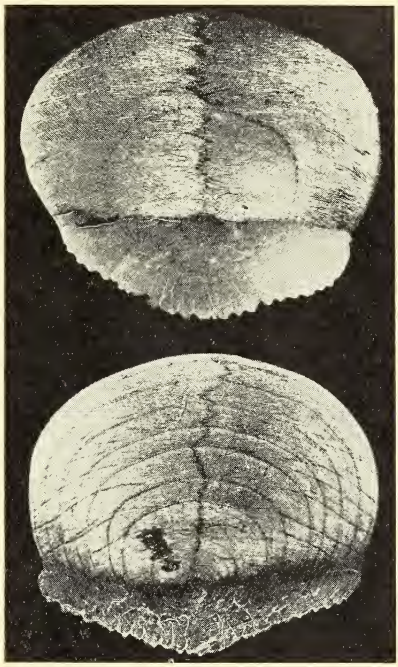


Fig. IV.

(A) **Scale of Herring showing one ring (after Lea).**

(B) **Scale of Herring showing age rings and zones (after Lea).**

Structural Characteristics

Investigations were carried out by the German scientist Dr. Heincke, and later by many other observers, regarding the difference in the structural characteristics of the various races of herring. These differences include numerical variations in the vertebræ, fin rays and scales along the keel of the fish. For instance, the mean number of vertebræ in the Norwegian spring herring is 57·6, and in the White Sea herring 53·6, a difference of 4 vertebræ. The mean of all herring races is 56.

The following table shows the main difference between the spring and autumn herring :—

	No. of Vertebræ	*Belly Scales*	*Ventral Fin*	*Lateral Length and Height of Head*	*Spawning Period*
Spring ...	51—57	36—46	Nearer head	Less	April and May Brackish Water
Autumn ...	55—58	33—48	Nearer tail	Greater	August to Feb. Salt Water

Ascertaining the Age of Herring

During the period 1895-1899, experiments were made to determine the age of fish by certain markings on their scales and earstones (the latter are small discs situated on either side of the brain, and termed ' Otoliths '). F. A. Smith was the first to associate rings on the scales of fish as an index of their age, and the Norwegian experts Hyort and Dahl carried out the fundamental investigations in connection with the herring. Later Einer Lea, of Bergen, made a thorough study of the subject and demonstrated a definite connection between the growth of the scale and that of the fish from year to year.

The scale of a herring is divided by a tranverse line into two parts, one is transparent and the other shows a number of zones or rings which run parallel with the edge of the scale. These indicate the age of the fish in much the same way as the annual rings seen in the trunk indicate the age of a tree. In the herring a transparent zone and a dark ring constitute a year's growth. Lea suggested that the distance between any two scale rings might be proportional to the amount of growth made by the herring in the same period. The Norwegian investigators claim to have proved that the broad transparent zones are formed in from May to October, while the narrow dark bands are formed in from November to April, and known as ' Summer Rings ' and ' Winter Rings ' respectively.

The scales and zones are not always clearly marked, especially in older fish, and there are also individual ' faults ' which sometimes make calculation of age difficult. Again, spring or autumn spawned fish must be differentiated. Autumn hatched herring may be 15 to 18 months old before the first winter ring appears, but spring fish acquire the first ring in from 9 to 13 months, a difference of 6 months in fish exhibiting the same number of rings. Prolonged research, however, has shown that the scales of the herring are very reliable and give accurate details of their age.

The earstones are sometimes used for ascertaining the age of herring. These are six in number, but only the two largest show clear markings and are represented by alternate white and blue zones. The broad white zone indicates summer growth and the narrow blue one winter growth. This method is used by German fish experts when dealing with herring catches from trawlers.

The Herring Fisheries

Scotland.—Fishing takes place along the whole of the east coast of Scotland, including the Shetlands and Orkneys,

from Wick to Eyemouth. The winter and early spring fishery is mainly in the Firth of Forth, near May Island, and at Wick and Stornoway. From May to June fishing is carried on off the Shetlands (east side), and from July to December, off the Orkneys, Shetlands, Aberdeen, Peterhead, Fraserburg, and Wick.

England.—The east coast spring fishery commences in May, at North Shields and Lowestoft ; and in June, July, and August, is carried on at Berwick, Seahouses, Blyth, North Shields, Hartlepool, Scarborough, Grimsby, and Whitby. In September the great fisheries commence at Yarmouth and Lowestoft, reaching their maximum in October and decreasing in November. These herrings are caught during their migration to the Straits of Dover and the north coast of France. In October and November fishing takes place at Folkestone and Hastings ; and from November to January, at Torbay, Plymouth, Newlyn, and St. Ives.

The Norway herring fishery season opens about the end of December, and finishes about the middle of May.

Fishing

The commercial methods of catching herring are by Trawling, Drifting, and Seining (set nets).

TRAWLING.—This is now almost entirely confined to German fisheries, and is prohibited within the territorial waters of England, Scotland, and Wales. The first trawled herring were landed at Wick in 1902. The chief objection to this method of fishing was that the meshes of the trawl-net were comparatively small and closed by the action of the net when in use. It not only caught immature herring but also destroyed the eggs and young larvæ. In 1911, a Government Committee of enquiry was appointed, owing to the great agitation against trawling, which was considered a menace to the herring industry.

DRIFTING.—Drift-netting, or driving, which is in general use off the coasts of England and Scotland, has been carried on from time immemorial on the same fishing grounds and at the same time of year without detriment to the future supply of herring. The majority of the drifters are steam driven (introduced in 1897), but there are still a few motor propelled vessels in use. The term ' drift-net ' is derived from the manner in which the nets are worked. They are neither fixed or towed within any precise limits of water, but are cast or shot at any distance from the land and are allowed to drift in whatever direction the tide may take them.

The drift-net is a single stretch of specially prepared cotton netting from 100 to 180 feet in length and about 30 to 40 feet

in depth. In Scotland a mounted net ready for fishing measures about 100 feet in length and 46 to 50 feet in depth. These are fastened together end to end, forming a train, fleet, or drift of nets. The number comprising the fleet of a drifter varies from 50 to 130 or more. The net is so constructed (mesh one inch square) that the herring is able to push its head through, but not its body. Once the gill covers are caught it is impossible for the fish to release its head. The upper edge of the net is supported by cork floats and as an additional support buoys (bowls, buffs or pellets) *i.e.* balloon-shaped canvas bags, painted various colours, are attached by a rope to the corner of each net. By lengthening or shortening this rope the net can be kept at any distance below the surface of the water. The net nearest the drifter (look on net) is marked by a white buoy (puppy). A drifter usually shoots its nets in the late afternoon and a complete wall or barrier of netting, perhaps two or three miles in length, is hanging perpendicularly in the sea, either at the surface or a few fathoms down. After ' shooting ' a vessel lies head on to the nets until the morning, or such time as a considerable quantity of fish are found enmeshed. The nets are hauled in by a steam capstan and the catch shaken out. The vessel then proceeds home at full speed so that samples of the fish may reach the market as early as possible. The herring are removed from the drifter in baskets (swills), each holding half a cran, which consists of 450 to 500 fish, approximately 1½ cwts. A good shot, or catch, averages 90 to 100 crans.

The wind has a distinct influence on successful fishing. A northerly breeze is preferred at the start of the season. It is said that a S.S.E. wind with unsettled weather accompanies a good catch. In calm weather herring swimming near the surface can be distinctly heard, and at night their phosphorescent bodies cause streaks or sheets of light on the surface of the sea.

The heaviest catches of herring have always been associated with a full moon, particularly in connection with the East Anglian fisheries. From time to time many theories have been put forward to account for this curious phenomena, but no satisfactory explanation has been given. The study of ' Lunar periodicity ' on fish has been investigated by Savage and Hodgson of the Fisheries Laboratory, Lowestoft, and the following is an extract from their paper on this subject :—

> ' We have found a definite rhythm in the quantities of herrings caught off East Anglia, a monthly rhythm with maximum coinciding with the period of " full " moon. Regarding the abundance in the great autumn fishing we learn that the early October full moon is not

likely to cause a definite peak in the landings. The best condition for a productive fishery appears to be when the October full moon occurs during the second week, for in this case it is found that the peak in the landing which accompanies this moon is approximately equal to the peak which appears at the time of the November full moon. Under these circumstances a period of five weeks of good fishing can be expected.'

Year after year the fleets of miscellaneous craft sail from the British Isles, France, Holland, Norway, Sweden, and Germany to gather a certain harvest which the enormous shoals of herring offer to the courageous activities of these nations. Since ancient times, kings and queens, illustrous statesmen and political economists have looked upon the herring fisheries as the most important and valuable of all maritime expeditions.

The nature of the work tends to form robust sailors, intrepid mariners and experienced and patient navigators. The nations engaged in this industry know how to make it a source of inexhaustible riches.

SOME EARLY DIPTERA

CHRIS. A. CHEETHAM

THE small genus of Dolichopod flies called *Hydrophorus* Fall. is represented in Britain by about a dozen species. In Yorkshire we get the small *H. nebulosus* Fln. fairly frequently in rough places with a wet surface and it is widely distributed. In 1921 I recorded *H. borealis* Loew. from Helwith Moss ; this is frequent in the Scottish Highlands, but these are the only recorded Yorkshire species, but while at Helwith Moss, on March 27th last, I saw a solitary specimen on a pool which on examination proved to be *H. litoreus* Fall. I made several visits later on but succeeded in taking only *H. borealis* Loew. which was very plentiful the following week in a pool in another part of the Moss. The habit of the species in keeping to and alighting on the water surface makes the capture rather difficult.

On May 2nd, I caught my first Tipulid this year. A ♀ was ovipositing in a tuft of *Bryum pseudo-triquetrum* Schwaeg, a moss growing in a swampy area and I caught one male and several other females. The species proved to be *Tipula macrocera* Zett. ; this was the first of the genus I caught last year in Crummockdale, 14/4/35, and which was first added to the Yorkshire list from Ingleborough, May 29th, 1934. It is possibly the early time of appearance that has kept the species from our lists until lately.

THE DISTRIBUTION OF *TETRAPHIS BROWNIANA* GREV., IN CHESHIRE AND IN STAFFORDSHIRE

T. H. B. BEDFORD

THE earliest reference to the occurrence of *Tetraphis Browniana* in Cheshire (V.C. 58) which it has been possible to trace, is contained in Buxton's *Botanical Guide to the Flowering Plants, Ferns, Mosses, and Algae within sixteen miles of Manchester* (1849). Here the moss is recorded for Alderley Edge and the valley of the River Dean.

In *Bryologica Britannica*, Third Edition, 1855, by Wilson, the author describes *T. repanda* Funck. and states that 'barren specimens corresponding with the description have been found near Frodsham in Cheshire, growing with Schistostega, but in the absence of fruit we cannot safely pronounce them to be this species.'

Whitehead in *The Flora of Ashton-under-Lyne* (1888) gives two Cheshire stations for *T. Browniana* : Stayley Brushes and Hattersley.

I am informed by Mr. J. B. Duncan that although *T. Browniana* is recorded for Cheshire in *The Census Catalogue of British Mosses*, he has no particulars of any locality in which the moss is to be found.

I have found this moss growing over a considerable area in the upper valley of the Goyt. It is particularly abundant along the sides of the little streams which run down to the Goyt in the region known as Goyt's Cloughs. It fruits freely.

Although hitherto unrecorded for Staffordshire (V.C. 39) I have found *T. Browniana* in the north of the county near Flash. Here also it is to be found in suitable situations over a considerable area. The moss is very fertile. It is especially abundant in Lud's Church and along the sides of the Black Brook. Specimens have been submitted to Mr. J. B. Duncan, who has kindly confirmed the identification.

It would seem probable that *T. Browniana* is a more widely distributed moss than is generally supposed.

GIBBERELLA SAUBINETII

THE fungus which causes ' Scab ' of wheat and other cereals has been referred to *Gibberella saubinetii* (Mont.) Sacc. Examination of an authentic specimen of the latter from Montagne has shown that *G. saubinetii* (published in 1856) is a synonym of *G. cyanogena* (Desm.) Sacc. (published in 1848). But the parasitic *Gibberella* on cereals is a different species, and, as it was named *Sphaeria Zeae* by Schweinitz in 1822, it must be known as *Gibberella Zeae* (Schwein.). It is hoped to publish full details at an early date. *G. cyanogena* is a common saprophyte, and was recorded for Yorkshire from Salterhebble by Crossland. Only one British record of the perfect stage of *G. Zeae* is known to me—on wheat, Cockle Park, Northumberland (Dr. F. T. Bennett).—T. PETCH.

THE BUTTERFLIES OF THE HUDDERSFIELD DISTRICT

W. E. L. WATTAM

In the *Transactions* of the Huddersfield Naturalists' Society for December, 1883, pp. 13-20, the late Mr. S. L. Mosley, F.E.S., published a list of the then known species of Macro-Lepidoptera recorded for the Huddersfield District. The records under Diurni numbered twenty-four species, of which thirteen were even then considered as no longer occurring in the district. Considering the many natural changes which have taken place during the period of fifty-three years since the publication of the list, by reason of the demolition of very old woods, charming old hedgerows with their broad margins of varied vegetation, wholesale clearance of roadside waste, as well as extensive building developments in the outer parts of the district, it might be well to place on record the present day list of the Diurni known to me as definitely occurring within the Huddersfield district. My experiences as a collector of Lepidoptera (both local and otherwise) covers a period of forty-two years, and although for some time past I have ceased to add to my collection, I have always maintained an interest in the insects of that order. Such local list is as follows :—

Pieris brassicæ. Still very common.

P. rapæ. The same remark applies.

P. napi. Not so common as the last two species, but still in good numbers, especially in the moorland cloughs where the larvæ feeds on *Cardamines amara* and *C. hirsuta*.

Euchloe cardamines. Sparingly in Hardon Clough, Meltham, from 1896 to 1914, but not seen there since. There are always a few in the vicinity of Barnsley Old Canal, Cawthorne. It has also been recorded from Skelmanthorpe.

Vanessa polychloros. Still only seen occasionally. I saw specimens in my garden at Newsome in 1934 and 1935.

V. urticæ. This species was quoted as a 'Straggler' in 1883. It is now one of the species which has definitely increased, especially since 1933. Larvæ is recorded as abundant at Skelmanthorpe, and I have seen larvæ many times at Netherton and Healey House.

V. Io. Is still rare. I noted one in my garden in 1934 and three in 1935. I have never yet met with the larvæ locally.

Pyrameis cardui. The old list stated 'Occasionally distributed.' It was definitely known to breed at Skelmanthorpe : see *The Naturalist*, 1924, p. 88 and 1925, p. 61. I have met with it at Newsome, Honley, Thurstonland, Marsden

and Cawthorne. It is apparently more noticeable during the occasional immigrations of this species.

P. atalanta. My remarks upon *V. urticæ* apply equally to this species.

Argynnis paphia. Very rare. I saw three specimens at Broken Cross, Almondbury in July, 1929. The late Mr. Ben Morley records it from Skelmanthorpe : see *The Naturalist*, 1919, p. 39.

Epinephele ianira. In the old list, was stated as having ' disappeared.' I never met with this species locally until July, 1932, at Berry Brow. Since then I have seen a good many specimens at the same place, also at Primrose Hill, Farnley and Gunthwaite.

Cœnonympha pamphilus. The old record says ' Formerly at Farnley.' This is another of our local species which is now abundant, especially along the moorland areas at Meltham, Holmfirth and the Chew Valley.

Chrysophanus phlœas. This glorious butterfly has increased immensely since 1928. Definite breeding localities have always been known at Skelmanthorpe, Netherton and Honley. It was especially noticeable in the summer months of 1934 and 1935, occurring in great numbers even on the heather moors. In August, 1935, I have counted as many as twenty-two specimens adding beauty to the flower beds in my garden.

Lycœna icarus. The only locality I have seen it is near to Clayton West. The late Mr. B. Morley makes frequent reference to its occurrence at Skelmanthorpe : see *The Naturalist* for 1922, p. 43 ; 1925, p. 61 ; and 1926, p. 55.

SOME MORE INSECT JACOBITES

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

Like Mr. Marriner I have always been interested in the insect visitors to the Ragwort and can add a few to his records. Diptera are especially fond of this plant and among its regular visitors may be mentioned *Stictodiplosis jacobaeæ* which galls the plant ; *Phytomyza albiceps*, which mines the leaves ; and a host of other flies, including many *Syrphidæ*, *Helophilus* and *Eristalis* spp., *Platychirus albimanus*, *Syritta pipiens*, *Sphaerophoria scripta*, and *Syrphus balteatus* ; Muscids are *Phorbia seneciella* and *Lucilia* spp. ; Tachinids are *Eriothrix rufomaculatus*, *Ernestia radicum*, *Echinomyia fera* and *Bucentes cristata* and *geniculata* ; Conopids are *Conops flavipes*, *Sicus ferrugineus* and *Physocephala rufipes* ; and Trypetids are *Carphotricha guttularis*, *Sphenella marginata* and *Urellia stellata*. Among the Hymenoptera I have found several species of *Bombus*, *Andrena*, *Halictus* and *Nomada* and the common sawfly *Allantus arcuatus*. Lepidoptera especially fond of ragwort are the meadow brown and smallcopper butterflies and the moth *Chareas graminis*. Bugs recorded from the plants are *Therapha hyoscyami*, *Pentatoma rufipes*, *Camptobrochis lutescens*, *Deraeocoris ruber*, and the hopper *Evacanthus interruptus*. The beetle *Rhagonycha fulva* is very fond of ragwort and also are found *Chrysomela didymata*, *Longitarsus dorsalis* and *Orthochaetes setiger* and *insignis*, the latter two at the roots. Ragwort has its special plant louse *Aphis jacobaeae* and a mite *Eriophyes lioproctus* galls the plant.

In Memoriam

F. A. MASON, F.R.M.S.

The death, after a long illness, of Mr. Francis Archibald Mason at his home in Chapeltown, Leeds, on March 4th, 1936, at the age of 58, was an event of tragic interest to the Yorkshire Naturalists' Union. Mr. Mason had only recently vacated the Presidency of the Union, which he held in 1934, and he

Photo by] [*Bacon, Leeds*

had previously been joint or sole secretary of the Union for fourteen years. During that period one may safely say that no one had been more intimately concerned with the activities of the Union, or was more widely known to its members.

Mr. Mason had lived in the Leeds district for about thirty-five years, although he was a native of Leicester. His interest in nature seems to have been life-long. He was also one of the group of Yorkshire naturalists who admitted a great debt to the influence of Wm. West, some of whose classes he attended. Mr. Mason became an active member of the Leeds Naturalists' Club, of which he had been a member for twenty-seven years, and of which he was President in 1924. He was

also a Fellow of the Royal Microscopical Society and a member of the British Mycological Society. Mr. Mason was almost equally well known as a director of Murphy and Sons, analytical chemists, in which capacity he controlled the work of the firm on biological problems of industrial importance. His sound judgement contributed as much to his success in this field as did his wide range of specialised knowledge. He was a member of the Society of Public Analysts, and at one time Chairman of the North-Eastern Section of the Institute of Brewing. In 1907 he married Miss Alice Parrott, a Leeds teacher, who died in 1919. He leaves behind a son and a daughter.

Mr. Mason's professional interests had led him to a specialised knowledge of the fungi, and, out of doors, he was naturally attracted to the wider study of this group in nature. His exact knowledge of the fungi in the field was easily apparent, particularly in regard to the smaller and more difficult genera. He was using this knowledge to build up a framework of the ecological relationships of the fungi which was of great value. He outlined some of his conclusions in his Presidential Address in 1934 (*Naturalist*, 1935, pp. 9-17) on ' Some Ecological Considerations of the Fungi.' He was, in addition, a good all-round naturalist, but his work on fungi stands in the direct tradition of his predecessors in Yorkshire, Crossland, Massee, and Cheesman.

In spite of the soundness of his work in this direction, I think Mr. Mason's chief service to Yorkshire naturalists was his work as secretary of the Yorkshire Naturalists' Union. The Union passed through a very difficult period after the war and this is a fitting place to record my conviction that its subsequent success was largely due to his labours and influence. He was naturally a man of a retiring disposition who avoided the limelight whenever possible. Behind the scenes, however, he was continuous and untiring in his efforts to make the meetings a success, and he would spare no efforts to achieve this end or to increase the reputation of the Union. In addition, he freely gave his services as a lecturer or guide, and all these efforts, sandwiched into the activities of a very busy life, may, I fear, have affected his constitution. His passing must be deplored by all who knew him. His monument is set up in the hearts and minds of his fellow men.—W.H.P.

LIST OF MEMBERS OF Y.N.U.

In the preliminary copy of the list of members of the Y.N.U. which was sent out with the May issue of *The Naturalist*, there should be added the following among the affiliated societies: 1908 Leeds Geological Society. *Secretary*: Dr. J. E. Hemingway, Department of Geology, The University, Leeds 2.

YORKSHIRE PSOCOPTERA

JAMES M. BROWN, B.Sc., F.L.S., F.R.E.S.

THE ' Psocoptera ' include small and delicate insects related to the Book Lice and Lesser Death-watch insects. They are usually recognised by their characteristic wing neuration, but it should be noted that many of the species are either wingless, or their wings are much reduced, sometimes to mere scale-like structures, while in some species the males may be fully winged, and the females may have reduced wings.

They occur most usually among the foliage of various trees, some species having a preference for Conifers, while others select the deciduous trees, frequently oaks, or they may occur on the bark, where certain species construct webs under which they, with their eggs or young, find protection. Many, especially of the wingless kinds, are to be found under stones and similar objects on the ground, or in turf. Others again occur within doors where they do much damage among papers and books, herbarium plants and insect collections, or even to dry food substances.

The scanty references to Yorkshire species in entomological literature, apart from the reports of the more recent field meetings of the Y.N.U., suggest that the group has not received a great deal of attention from Yorkshire naturalists, and in the Report of the Union for 1926 (*The Naturalist*, 1927, p. 117) the late G. T. Porritt, then President of the Entomological Section, suggested that attention might be directed to this order. For some years I have collected Psocids in many parts of the county and the results are embodied in the following list. I have also to thank several members of the Y.N.U. (especially Dr. W. J. Fordham, Messrs. R. Butterfield, W. D. Hincks, W. P. Winter, and J. Wood), for sending me specimens for identification, and have been able to increase the number of localities by the inclusion of their records. A few further references which I have been able to discover in entomological literature have been added. Records not otherwise assigned are my own.

There is no doubt that further search will enable considerable additions to be made to the county list, especially among the wingless species.

LIST OF SPECIES.

ORDER PSOCOPTERA (COPEOGNATHA).

FAMILY PSOCIDAE.

1. *Metylophorus* (*Psocus*) *nebulosus* (Steph.).
   A fairly large species found mainly on oaks.
   V.C. 61. Ruston Parva.
   V.C. 62. Helmsley.
   V.C. 64. Harewood (Leeds) (W.D.H.), Ripon.

2. *Psococerastis* (*Psocus*) *gibbosa* (Sulz.) (*longicornis* Fabr.).
This is our largest species, and was taken last year for the first time, also on oaks.
V.C. 62. Hovingham, August, 1935.

3. *Trichadenotecnum sexpunctatum* (L.).
Probably a widely distributed species frequently found on bark.
V.C. 63. Keighley (J.W.), Ecclesall Woods (Sheffield), Wharncliffe.
V.C. 64. Ripon.

4. *Amphigerontia bifasciata* (Latr.).
Another widely distributed species occurring among the foliage and on the bark of various trees.
V.C. 61. Allerthorpe, Market Weighton, Driffield.
V.C. 62. Helmsley.
V.C. 63. Keighley, Bingley, and Shipley Glen (J.W.), Millhouses (Sheffield).
V.C. 64. Grassington (J.W.), Ingleton, Malham, Winterburn.
V.C. 65. Witton Fell, Leyburn, Sedbergh, Richmond, Aske, Brignall Banks, Dent.

5. *Amphigerontia contaminata* (Steph.).
Apparently less common than the last, but probably often confused with it.
V.C. 63. Keighley (R.B.), Millhouses (Sheffield).
V.C. 64. Winterburn.

6. *Loensia variegata* (Latr.).
V.C. 61. Ruston Parva.
V.C. 62. Buttercrambe Woods (W.D.H.), Hovingham.
V.C. 63. Ecclesall Woods (Sheffield).
V.C. 64. Adel (Leeds) (W.D.H.).

7. *Loensia fasciata* (Fabr.).
V.C. 61. Allerthorpe Common, Ruston Parva.
V.C. 62. Buttercrambe Woods (W.D.H.), Sandburn Woods.
V.C. 63. Ecclesall Woods (Sheffield), Marr.
V.C. 64. Ripon.
V.C. 65. Dent.

8. *Graphopsocus cruciatus* (L.).
This is one of our commonest and most widely distributed species. The size of the wings varies in a most interesting manner.
V.C. 61. Bubwith (W.J.F.), Market Weighton, Driffield, Allerthorpe Common.
V.C. 62. Cleveland (J.W.H.H., *Entomologist*, 1916, p. 134), Osmotherley, Hovingham, Sandburn Woods.
V.C. 63. Keighley, Bingley, and Shipley Glen (J.W.), Ecclesall Woods (Sheffield).
V.C. 64. Bishop Wood (Selby), Winterburn, Malham, Ripon.
V.C. 65. Coverdale, Dent, Sedbergh, Richmond, Aske, Brignall Banks.

9. *Stenopsocus immaculatus* (Steph.).
A common species on deciduous trees.
V.C. 61. Ruston Parva, Market Weighton.
V.C. 62. Cleveland (J.W.H.H., *Entomologist*, 1916, p. 134), Osmotherley, Helmsley, Hovingham, Buttercrambe Woods.
V.C. 63. Keighley (J.W.), Ecclesall Woods (Sheffield).
V.C. 64. Harewood (Leeds) (W.D.H.), Ingleton, Malham, Winterburn, Ripon.
V.C. 65. Sedbergh, Dent, Richmond, Aske.

Family Caeciliidae.

10. *Reuterella helvimacula* End.
This curious little species, with winged males and wingless females, lives mainly under webs spun in the crevices in the bark of such trees as elm and oak. Under these webs are to be found both the adults, the eggs, and the immature insects.
V.C. 61. Elmswell (Driffield).
V.C. 62. Egton Bridge, Buttercrambe Woods.
V.C. 63. Ecclesall Woods and Millhouses (Sheffield), Wharncliffe.
V.C. 64. Ripon.
V.C. 65. Aske, Brignall Banks.

11. *Berthauia lucifuga* (Ramb.).
The wingless females of this species are occasionally found beneath stones. It does not appear to be at all common with us.
V.C. 64. Ripon, Goredale.

12. *Kolbea quisquiliarum* Bertk.
This is another species with wingless females, which occur on the ground among turf. It has been taken once only in the county.
V.C. 65. Aske.

13. *Cæcilius flavidus* (Steph.).
This is a common and plentiful species, and is usually beaten from trees, chiefly oaks.
V.C. 61. Allerthorpe Common, Market Weighton.
V.C. 62. Buttercambe Woods (W.D.H.), Scarborough, Helmsley, Hovingham, Sandburn Woods.
V.C. 63. Keighley (J.W.), Ecclesall Woods.
V.C. 64. Malham, Winterburn, Bishop Wood (Selby).
V.C. 65. Dent, Richmond, Aske, Brignall Banks.

14. *Cæcilius obsoletus* (Steph.).
V.C. 61. Market Weighton.
V.C. 62. Buttercrambe Woods, Helmsley.
V.C. 65. Sedbergh, Richmond, Brignall Banks.

15. *Cæcilius burmeisteri* Brauer.
This species may easily be confused with the last, and like it is mainly obtained by beating Scots Fir trees.
V.C. 61. Market Weighton.
V.C. 62. Sandburn Woods, Buttercrambe Woods.
V.C. 64. Winterburn.
V.C. 65. Sedbergh, Aske, Brignall Banks.

16. *Lachesilla* (*Pterodela*) *pedicularia* (L.).
This species frequently occurs in swarms, and is often seen about windows inside houses in the autumn time, but strangely enough, I have very few records for Yorkshire. It probably is, however, quite plentiful.
V.C. 61. Allerthorpe (W.D.H.).
V.C. 63. Wharncliffe.

17. *Peripsocus phæopterus* (Steph.).
V.C. 61. Driffield, Ruston Parva, Market Weighton.
V.C. 62. Hovingham, Osmotherley.
V.C. 63. Ecclesall Woods (Sheffield).
V.C. 64. Winterburn, Malham, Ripon.
V.C. 65. Coverdale, Witton Fell, Richmond, Aske, Sedbergh.

18. *Ectopsocus briggsi* (Mc. L.).
This species may sometimes be found abundantly among decaying leaves during the winter time (*Entomologist*, 1916, p. 62), and occasionally can be obtained in enormous numbers by beating

various trees. So far the only county records I have all refer to the N.E.

V.C. 62. Cleveland (J.W.H.H., *Entomologist*, 1916, p. 134), Whitby (H. Britten), Helmsley, Hovingham.

FAMILY MESOPSOCIDAE.

19. *Mesopsocus unipunctatus* (Mull.).

This is a common and widely distributed species, and occurs throughout the county.

V.C. 61. Frog Hall (J.W.F.), Allerthorpe, Market Weighton.
V.C. 62. Hovingham, Sandburn Woods, Buttercrambe Woods.
V.C. 63. Ecclesall Woods, Wyming Brook (near Sheffield), Deffer Wood (Cawthorne), Marr, Keighley (J.W.).
V.C. 64. Winterburn, Ripon, Bishop Wood (Selby).
V.C. 65. Richmond, Aske, Dent.

20. *Elipsocus cyanops* Rost.

A common species on pines.

V.C. 61. Allerthorpe Common.
V.C. 62. Hovingham, Buttercrambe Woods.
V.C. 63. Ecclesall Woods (Sheffield), Deffer Wood (Cawthorne).
V.C. 64. Winterburn, Ripon, Bishop Wood (Selby).
V.C. 65. Whitcliffe Wood (Richmond), Aske, Dent.

21. *Elipsocus abietis* Kolbe.

Also occurring on pine trees, but not so frequently as the last.

V.C. 65. Dent.

22. *Elipsocus westwoodi* Mc. L.

A very plentiful species obtained by beating various trees. It occurs throughout the county.

V.C. 61. Skipwith Common.
V.C. 62. Egton Bridge, Hovingham.
V.C. 63. Keighley (R.B. and J.W.), Shipley Glen (J.W.), Ecclesall Woods, and Wyming Brook (Sheffield), Wharncliffe.
V.C. 64. Ingleton, Malham, Winterburn, Ripon.
V.C. 65. Coverdale, Leyburn, Richmond, Brignall Banks, Aske, Dent, Sedbergh.

23. *Elipsocus hyalinus* Steph.

Equally plentiful as the last, also obtained by beating various trees.

V.C. 61. Allerthorpe Common, Driffield.
V.C. 62. Hovingham, Sandburn Woods, Buttercrambe Woods.
V.C. 63. Skipton (J.W.), Ecclesall Woods, and Wyming Brook (Sheffield), Wharncliffe, Deffer Wood (Cawthorne).
V.C. 64. Harewood (Leeds) (W.D.H.), Arncliffe, Malham, Winterburn, Ripon.
V.C. 65. Whitcliffe Woods (Richmond), Aske, Brignall Banks, Sedbergh, Dent.

24. *Philotarsus flaviceps* (Steph.).

Frequent in trees, especially conifers.

V.C. 61. Driffield, Elmswell, Ruston Parva.
V.C. 62. Helmsley, Hovingham.
V.C. 63. Keighley (J.W.), Ecclesall Woods (Sheffield).
V.C. 64. Winterburn, Ripon.
V.C. 65. Richmond, Brignall Banks.

FAMILY LIPOSCELIDAE.

25. *Liposcelis divinatorius* (Mull.).

This is one of the book-lice and is, perhaps, the most annoying

pest in herbaria and insect collections. It is probably abundant all over the county, but I have few actual records.
V.C. 63. Saltaire (W.P.W.), Sheffield.

FAMILY PSYLLIPSOCIDAE.

26. *Psyllipsocus ramburi* Selys.
I have only a single record of this species, from specimens sent by W. P. Winter.
V.C. 63. Saltaire (*The Naturalist*, 1931, p. 264).

FAMILY TROGIIDAE.

27 *Lepinotus inquilinus* Heyd.
This is another of the species occurring within doors, and sometimes in large numbers. In this case also I have only a single Yorkshire record, derived from material supplied by G. B. Walsh and obtained by J. W. Clarke (Scarborough).
V.C. 62. Scarborough (*The Naturalist*, 1930, p. 86).

28. *Clothilla* (*Trogium, Atropos*) *pulsatoria* (L.).
This is another of the book-lice, and a household pest, and a very troublesome insect among stored papers and entomological collections. It is well known as the 'Lesser Death-watch,' and is one of the causes of the tapping sounds frequently heard in houses (Pearman, *E.M.M.*, 1928, pp. 179-186). It is a common and widely distributed species, but again I have few definite records.
V.C. 63. Shipley (W. Ritchie) (*The Naturalist*, 1932, p. 60), Sheffield.

29. *Hyperetes guestfalicus* Kolbe.
This is another species with much reduced wings. It is probably quite common, but overlooked.
V.C. 64. Winterburn.

30. *Hyperetes britannicus* Harr.
This is apparently a seashore species.
V.C. 61. Speeton (R.S.B., *E.M.M.*, 1926, p. 22).

31. *Lepidilla kelloggi* Rib. (*Pteroxanium squamosum* End.).
This curious species with much reduced wings was first recorded from Britain by Enderlein in 1922, and described as a new species, from specimens taken in a house in Sussex (*E.M.M.*, 1922, p. 101). It is now known from nine counties, and occurs in the open, under logs and such-like shelters. It has been taken on two occasions in Yorkshire.
V.C. 62. Helmsley, September, 1935.
V.C. 64. Ingleton (K. G. Blair, *E.M.M.*, 1928, p. 269).

BRITISH SPECIES OF *ODYNERUS*

APPEAL FOR SPECIMENS

I HAVE in preparation an account of the British species of *Odynerus*, including as full a description as possible of their variation, distribution, and habits, and am particularly anxious to view all available Scottish and Irish material. Would, therefore, hymenopterists who may have in their possession any such material, no matter how slight, be good enough to communicate with me?—H. PARRY JONES, F.R.E.S., Public Natural History Museum, Wollaton Hall, Nottingham.

1936 June 1

RECORDS

BLACK TERN (CHLIDONIAS N. NIGER)

On May 16th a single bird hawked for insects above the reedy margins of a mere on the South Yorkshire boundary. My wife and I watched it for some 15 minutes and noted it had the full black head, neck, and chest of the breeding male.

FIELDFARE (TURDUS PILARIS) AND TURTLE DOVE (STREPTOPELIA T. TURTUR)

On May 10th a party of some 50 Fieldfares perched, ' chaked,' and eventually flew from a tree, about 100 yards distant from the bush in which an hour earlier I had seen and heard my first Turtle Dove of the year. Any notes of later occurrences of Fieldfare would be interesting.

NIGHTINGALE (LUSCINIA M. MEGARHYNCHA)

I believe this species to be decreasing in Yorkshire. Only one of several habitats known to me is tenanted this year. I should be obliged to any members of the Y.N.U. who would send me notes bearing on the present status of Yorkshire Nightingales. Information given confidentially would be so treated.—Ralph Chislett.

PIED FLYCATCHERS IN EAST YORKSHIRE

On May 7th a lady rang up from Filey to tell me that she had just seen a pair of Pied Flycatchers there. I congratulated her on her good fortune, for I had never seen one here (Reighton) in the fourteen years odd of my residence, and these were the first that had been reported to me in the neighbourhood during that time. By strange coincidence, on coming in very shortly afterwards, I spotted one (♂) in our own hedge, and watched it for some time as it flitted about the hedge and grass verge in what, with grey sky and bitter wind, appeared a rather hopeless search for small insects.

As the distance precludes any possibility of my bird being one of the pair reported at Filey only an hour or so before—even had they been likely to work in this direction—and as, on the following day, I heard of what may have been still another at Hunmanby, it would be interesting to know if any unusual influx of these pleasing little migrants has been observed in East Yorks.—T. Hyde-Parker.

YORKSHIRE HALIPLID RECORDS

An unfortunate misprint occurred three times in my note (under the same title) in the March issue of *The Naturalist*

(No. 950, p. 66), and in the interests of accuracy demands correction. It was this: 'Aerk' appeared after three specific names (two species actually, one being repeated twice) as the abbreviation of the describer's name (Gerhardt), instead of 'Gerh.'

It may be well on this occasion to point out that as Professor Balfour-Browne in the current (April) number of *The Entomologist's Monthly Magazine* (p. 77) rightly prints *H. nomax* B-B. as a synonym of *H. lineslatus* Mannerheim, the same change should be made in my note.—The Rev. E. J. Pearce, H.R., Mirfield, Yorkshire.

HEMIPTERA AND HOMOPTERA RECORDS

During 1935 many interesting 'Bugs' and 'Hoppers' have been collected in Whitby and district, several of which are new to Yorkshire and several new to North-East Yorkshire (V.C. 62). My thanks are due to my father for determining the material collected, also to Mr. W. J. Fordham for supplying the information regarding records. The usual dagger and asterick indicate new County and Vice-County records respectively.

HEMIPTERA

**Drymus sylvaticus* F. var. *ryei*. D. and S. Raithwaite, 1/5/35; Fylingdales Moor, 13/7/35.
**Piesma capitata* Wolff. Egton Bridge, 1/6/35.
**Aradus depressus* F. Beckhole, 4/5/35.
**Triphleps majuscula* Reut. Levisham, 4/8/34; Beckhole, 4/5/35.
**Arctocorisa linnei* Fieb. Sandsend, 5/5/35. H.B. (Senr.) and H.B. (Junr.).
**A. limitata* Fieb. Whitby, 31/5/35; Mulgrave Woods, 10/6/35.

HOMOPTERA

†*Idiocerus viduatus* Edw. Sleights, 23/7/35.
†*I. laminatus* Flor. Mulgrave Woods, 7/9/35.
**Pediopsis impura* Boh. Hazel Head, 27/7/35.
**Athysanus grisescens* G.H. Egton Bridge, 1/6/35.
†*Eupteryx britteni* Edw. Mulgrave Woods, 11/11/35.
†*Erythroneura pallidifrons* Edw. Whitby, 22/1/35. As a greenhouse pest.

The nomenclature adopted is that of Oshanin's *Katalog of Palaarktischen Hemiptera*, 1912.—H. Britten.

ORNITHOLOGICAL NOTES FROM WENSLEYDALE

February 27th. Golden Plover returned to moors.
March 6th. Curlew returned to moors.
March 29th. Song Thrush; nests with eggs found. Meadow Pipit returned to high ground.
April 2nd. Blackbird; nest with eggs. Greenfinch returned.
April 7th. Redshanks returned.
April 10th. One Little Owl shot in East Scrafton Ghyll by keeper.

April 16th.	Kept observation on a Common Buzzard for about 15 minutes. This was over some wooded country near Thornton Steward. After a while the bird rose high and flew north.
April 17th.	Pheasant ; nest with 10 eggs. This is very early for the district.
April 17th.	Tree Pipit returned.
April 21st.	Moorhen. Nest with 4 eggs.
April 23rd.	Lesser Redpoll returned.
	Willow Warbler returned.
	Wheatear returned (scarce).
April 25th.	Sandpiper returned.
	Ring Ouzel returned.
	Wood Pigeon. Nest with 2 eggs.
April 27th.	Swallow returned.
	Yellow Wagtail returned.
April 30th.	Sand Martin returned.
	Cuckoo returned.
	Whitethroat returned.
May 4th.	Fieldfares. A flock of about 50 feeding in lowlands. This is late.
May 6th.	House Martin returned.
	Grey Wagtail. We have a number of these birds inhabiting the moorland streams during summer.
May 8th.	Hedge Accentor. Nest with young.
	Chaffinch. Nest with 3 eggs.
	Lesser Whitethroat returned (scarce).
	Swift returned.

For some months now an almost pure white Blackbird has been resident near Cover Bridge.

On the Stoops above West Witton a really piebald Jackdaw has been resident for over 12 months. The bird is really white spotted with black.—John P. Utley, Scrafton Grange, Middleham.

A STOAT AND TROUT

An interesting incident regarding a Stoat was discovered on Melmerby Moor. One was suspected of spending a considerable time under a concrete mixing board left by the roadside, on the moorland, after some repairs to a culvert through which ran a small stream but 18 in. wide. On raising the board the Stoat ran out, but left behind him four freshly-caught Trout, about 4-5 ounces weight each. These had all been caught by the shoulder. The weather was severe and the stream partly frozen.—J.P.U.

REVIEWS AND BOOK NOTICES

The Insect Pests of Crops, 1932-34. (Bulletin 99 of the Ministry of Agriculture and Fisheries, 1/- net. H.M. Stationery Office.) This is a summary of the incidence of the more important agricultural and horticultural pests during the three years named. The major part of the summary is devoted to records in tabular form of the occurrence of the different pests, but there are also chapters dealing with new and foreign introductions and with developments of methods of control. Those responsible have reverted to the original plan of the earlier bulletins of including as many of the specific pests as possible, a step which, though making the report less readable, does certainly increase its value.

Sea Trout and Trout, by **W. J. M. Menzies,** pp. 220, 17 plates and 3 text figures, 10/6 net. (Edward Arnold & Co.) The author of this book, both as an angler and as the Chief Inspector of the Scottish Fishery Board, has had unrivalled opportunities of obtaining information about trout and sea trout. In this book he successfully summarises existing knowledge of this subject in non-technical language. He passes in review the history and distribution of these types of trout, their characteristics in form and life history, with numerous digressions in various directions such as scale markings, paths of migration, and peculiar races of trout. Perhaps the central point is that British brown, bull, and sea trout are members of one species exhibiting an extremely varied range of migratory activity and local variations of size, colour, and form. While some from Eastern Scotland are known to migrate in the North Sea up to 400 miles, others remain near their native rivers, like those of the Solway which apparently do not leave the Solway Firth. Still others only drop down to the brackish water for a time or in many cases do not leave fresh water. All the migratory trout of the British Isles represent either developmental stages or local races of the same species. Thus bull trout are shown to have the characteristics of an especially rapidly growing race not otherwise distinct. A curious point is recorded which is certainly not widely known. It is that brown and sea trout grow more rapidly in the first two years of life than salmon, when all are under similar natural conditions. This is a readable book of general interest.

The White Fish Industry: Second Report of the Sea Fish Commission for the United Kingdom, pp. 114, 1 map, 2/- net. (H.M. Stationery Office.) This report, although primarily dealing with industrial relationships, contains much of interest to those interested in our sea fisheries. It deals with the whole activity and organisation of the fishing industry. It is interesting to observe how the different fishing ports have specialised in fishing different types of sea water, and the report does full justice to the energetic and co-operative methods employed at Hull, which are clearly capable of solving some of the difficulties through which the industry is at present passing.

Hedge Folk in Twilight, by **Phyllis Kelway,** pp. xiv+178 with 22 photographs by the author, 6/-. (Longmans.) Miss Kelway has written a most interesting book about a few of the commonest wild creatures. She has succeeded in establishing friendly relations with dormice, field mice and shrews, and like all who do so she has been able to add to our knowledge of the habits of these animals. The two birds dealt with are the brown owl and the heron. The illustrations are charming, well reproduced, and really informative. Miss Kelway's style is interesting and natural, and her book should be enjoyed by naturalists of all ages.

The Passions of the Wild, by **W. R. Calvert,** pp. 276, 7/6. (Rich and Cowan.) The book presents a story of wild life in the Lake District. It centres mainly about two themes, the life and wanderings of a grey

hill fox and the romance of a village boy who is imbued with a love of nature. The characters, both animal and human, are true to type, and they evince a wide range of keen observation on the part of the author and show him to possess a fund of naturalistic detail. Ravens, buzzards, shrews, and many other beasts make up a carefully limned background, and the whole is of considerable interest to the nature lover. It may be of interest to Mr. Calvert that the reviewer would have been turned away from a book he would have been sorry to have missed by the barely appropriate title.

NEWS FROM THE MAGAZINES

The New Phytologist for May contains two papers of wide interest. These deal with the significance of mycorrhiza (by Alan Burges) and the distribution of the lizard orchid (*Himantoglossum hircinum*) by Ronald Good. N. G. Ball discusses the effect of different types of light on the subsequent opening of flower buds, and C. T. Ingold deals with the effect of light on the absorption of salts by *Elodea canadensis*.

The Journal of the Ministry of Agriculture for April, 1936, contains, among others, an article by Sir John Russell on the culture of the soya bean in England, while L. R. Johnson and H. W. Thompson contribute one on tomato sickness in Yorkshire. The May number contains articles on the diseases of outdoor grown tomatoes by T. Small, the cultivation of chicory as a vegetable by J. C. Wallace, and crop estimating and forecasting by F. Yates.

Zostera and Ruppia in the Humber. We may draw attention to an article by Graham Philip (*Journ. of Ecology*, 24, p. 205) dealing with the distribution of *Zostera*, *Ruppia*, and the associated algæ in the Humber. Data are given concerning the conditions of growth and the growth forms found in the area. The paucity of previous information about these plants is rather remarkable and it helps to make this contribution especially welcome.

The Entomologist's Record for May contains ' A note on Anthomyidæ (Diptera) reared from the flowers of Senecio,' by J. E. Collin ; ' *Rhopalomastix janeti* (Hym. Formicidæ), a species of ant new to science,' by H. Donisthorpe (Bangkok, Siam) ; ' July in North-Western Spain,' by P. H. Thomas ; ' Early stages of Indian Lepidoptera,' by D. G. Sevastopulo ; ' Scientific Notes and Observations,' ' Notes on Collecting, etc.' ; and supplement ' The British Noctuæ and their varieties,' by H. J. Turner.

The Entomologist for May contains ' Bulgarian Rhopalocera, June and July, 1933,' by P. H. Thomas ; ' British Lepidoptera Collecting, 1935,' by C. G. M. de Worms ; ' *Acropyga* (*Rhizomyrma*) *robae* sp. nov. (Hym. Formicidæ), a new South American ant, with remarks on the genus, etc.,' by H. Donisthorpe ; ' A new species of Danaiidæ (Lep. Rhop.) and other new Butterflies,' by G. Talbot (with plate of *Danaus dannatti* sp. nov.) ; ' Notes on Braconidæ : XV—Microgasterinæ ' by C. Morley ; and several notes and observations.

The Entomologist's Monthly Magazine for May contains ' Systematic Notes upon British Aquatic Coleoptera : Part XII—Gyrinidæ (Aulonogyrus, Gyrinus, Orectochilus),' by F. Balfour-Browne ; ' Results of the Oxford University Expedition to Borneo, 1932 : A New Species of Dihammus Thoms (Coleoptera, Cerambycidæ),' by Dr. S. Breuning ; ' On a collection of Humble-bees (Bombus and Psithyrus, Hymenoptera) from Cara Island, Argyllshire,' by O. W. Richards ; ' *Strongylognathus diveri* sp. n. (Hym. Formicidæ), a Genus and Species new to the British List, with Notes on the Genus,' by H. Donisthorpe (with figures) ; '' The Parasites of British Birds and Mammals : VII—Records of Ixodoidea from Hedgehogs and their Nests,' by G. B. Thompson ; and a few short notes.

COLLECTING APPARATUS.

Nets.	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

BRITISH BIRDS

AN ILLUSTRATED MONTHLY MAGAZINE

Edited by H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., H.F.A.O.U.;
Assisted by Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., F.Z.S., and N. F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

A complete current History of British Birds

ARTICLES **NOTES**
CORRESPONDENCE **REVIEWS**

Beautifully illustrated with Photographic and other Plates

ANNUAL SUBSCRIPTION, 20/- POST FREE; MONTHLY, 1/9 NET.
Specimen Plates with List of Contents post free.

London: H. F. & G. WITHERBY, 326, High Holborn.

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. EAGLE CLARKE, F.R.S.E., and F. BOYES.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. FORTUNE, F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

LONDON: A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C. 4.
And at HULL.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, **6/-** *post free.* *Single Parts,* **1/3.**

All communications to be addressed to—
W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. **Telephone: Temple Bar 9451.**

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and the connected Sciences. | Rundschau für Geologie und verwandte Wissenschaften | Rassegna di Geologia e delle Scienze affini.

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators.

Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liége (Belgique).

Annual subscription price:
35 Belgas, sent to Mr. G. TIBAUX, 35 rue des Armuriers, LIÉGE, BELGIUM, also through a bookseller.

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS.

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net.

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.

LONDON: A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE E.C.4.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.
J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., PH.D.
C. L. WALTON, M.Sc., PH.D.
F. E. WEISS, D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.MET.S.

Communications to :—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.
Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. **Single copies, 2/- net.**

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
June, 1936.

05.42

ULY, 1936

No. 954
No. 727 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

The Scoresbys and the Greenland Whale—*R. W. Gray* 145-151

Hypnum lamulosum **B. & S., in West Yorkshire. V.C. 64.**—*Chris. A. Cheetham* 152

Rook Roosts in the Manchester Area—*J. H. Ward* 153-156

Some Weather Effects in 1936—*Chris. A. Cheetham* 156

In Memoriam :—Percy Fry Kendall, D.Sc., F.R.S. (*portrait*)—*A.G.* 157-160

News from the Magazines 151, 160

Records 161

Yorkshire Naturalists at Drop Clough . . 162-164

Records of Yorkshire Coleoptera—*W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H., and Geo. B. Walsh, B.Sc.* 165-167

Reviews and Book Notices 167-168

Portrait 157

Smithsonian Institution
National Museum

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription 15/- per annum.

SMITHSONIAN INSTITUTION
JUL 22 1936
NATIONAL MUSEUM

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS.

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net.

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.

LONDON: A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE E.C.4.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- *per volume, or post free* 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

THE SCORESBYS AND THE GREENLAND WHALE

R. W. GRAY

THE Scoresbys, father and son, were the most noted of the English whalers; their names are inseparably connected with that of the Greenland whale. They were Yorkshiremen, connected with Whitby, and usually commanding whaling vessels sailing out of that port.

W. Scoresby (Junior), was a very remarkable person. His *Arctic Regions*, published in 1820, is authoritatively described as 'the foundation stone of Arctic Science' and as 'one of the most remarkable books in the English language.' His views on the Arctic Ocean and its currents may be referred to. The tree-trunks which drift south-west through the Greenland Sea he correctly attributed to 'some country beyond the Pole,' and the vast quantities of very thick ice as he correctly says 'must require an immense surface of sea for its generation.'[1]

In the Greenland Sea, in the time of the Scoresbys, the capture of the Greenland whale was prosecuted in spring in three more or less distinct situations, and in summer in one.

A. THE SPRING FISHINGS

At these fishings the whales were attacked before they disappeared into the depths of the ice. With reference to them, Scoresby says 'The parallel of 78° to 78½° is, on the whole, the most productive fishing station. The interval between this parallel and 80°, or any other situation more remote (*i.e.* farther north), is called the "northward," and any other situation in a lower latitude than 78° is called the "southward."' He also says 'the parallel of 77° to 77½° is considered a "dead latitude" by the fishers, but occasionally it affords whales also.'[2]

1. The 'northward' fishings or fishing stations.

At these fishings the whales were usually caught north of latitude 78° and east of longitude 2° W.; and usually in a lower latitude and less easterly longitude as the season advanced.

(*a*) The April fishing of latitude 80°.

The whales were usually caught in open water, outside the ice; Hakluyt's Headland being usually in sight. About the end of April the whales, many

[1] *Arctic Regions*, Vol. I, p. 5.
[2] Scoresby, W. (Junior), *Arctic Regions*, Vol. II, p. 210.

JUL 20 1936

of which were accompanied by calves, disappeared, probably into the ice, and the fishing came to an end.

(*b*) The fishing of May to June or July of latitude 78°, 79°, and 80°.

At this fishing the whales were caught among the ice; in bays or 'bights' in its margin; among the broken or 'pack' ice; among the unbroken ice or 'floes' and often between the two kinds of ice. The whales were mostly caught in May and June; in the former month Spitsbergen was sometimes in sight.

2. The 'southward' fishing station, also called the fishing of latitude 76°.

Scoresby is unfortunately vague about this fishing, he gives the latitude but not the longitude. The whales seem to have been caught in east longitude, in open water, or among 'bay ice,' outside the proper ice. Spitsbergen, in the vicinity of Horn Sound and Cape Lookout, was sometimes in sight. Scoresby describes the situation as 'unsheltered' and 'exposed to heavy swells.'

B. The Summer Fishing

At this fishing, the whales, or a section of them, were followed and attacked in the depths of the ice.

Concerning this fishing, Scoresby says: 'Before the year 1818, for at least a quarter of a century, the fishery generally was pursued between the parallels 76° and 80°; and the 79th degree, at a distance of thirty or forty leagues from the coast of Spitsbergen, afforded to the most perservering fishers, an abundant harvest, for years together. After the season of 1814, however, the northern fishery became extremely precarious; the whales then becoming uncommonly scarce, the fishers began to explore the seas farther to the southward, but without proceeding into the depths of the ice, or remaining among it beyond the middle or end of the month of July; an idea prevailing, that it was not only useless, but extremely dangerous to be entangled in the ice after this period. At the close of the season of 1817, I penetrated the ice in latitude 74°, about 100 miles towards the west, but without finding whales; and, the year following, two ships approached the coast of Greenland, and met with encouraging success. In 1820, I obtained a full cargo, principally upon this station, in latitude 74° down to 71°; and several other ships made successful fisheries amid the same ice, within sight of the *West Land*.'[1]

[1] Scoresby, W. (Junior), *Journal of a Voyage* (Edinburgh, 1823), p. 64.

The whales caught at each of these fishings were not equally large, or equally productive of oil and whalebone. The largest and most productive were those caught at the April fishing of 80°, the April to July fishing of 76°, and the summer fishing of latitude 70° to 75°.

Scoresby says: 'The whales seen in the spring in the latitude of 80° . . . are usually full grown animals . . . those inhabiting the regions of 78°, are of mixed size. Such as resort to fields in May and beginning of June, are generally young animals; and those seen in the latitude of 76° are almost always of the very largest kind.'[1]

My father referring to the capture of whales among the ice, says: 'The largest whales are taken between 70° and 75° N.; between 75° 30′ and 77° N. (in west longitude) the sea is usually barren of whales; 77° to 78° 40′ produces "second sized whales" averaging from ten to twelve tons of oil; whilst from 79° to 80° 20′ N. are only found "nursery whales" averaging from five to ten tons of oil each.'[2]

Scoresby thought there were tribes of Greenland whales inhabiting the Greenland Sea. He says: 'From an attentive observation of the facts, it would appear that different tribes of the mysticetus inhabit different regions, and pursue different routes on their removal from the places where first seen. These tribes seem to be distinguished by a difference of age or manners, and in some instances of species or sub-species.'[3]

Without denying the possibility of what Scoresby says, the differences between the whales caught at the different fishings seem to have been merely a matter of age and sex. The whales caught among the ice in latitudes 78°, 79° and 80° were certainly immature animals of either sex; those seen at the April fishing in latitude 80° were probably breeding females; those seen in April to July in latitude 76° were probably old males; whilst those killed among the ice in summer off Cape Hold-with-Hope and other parts of the east Greenland coast were certainly mostly males.

This assortment of the whales into groups, according to age and sex seems to have been connected, firstly, with the solicitude of the females for their calves; secondly, with the deficient diving powers and short whalebone of the immature whales.

The underlying facts were, or seem to have been, somewhat as follows:—

(1) In the spring areas of water green in colour and rich in

---

[1] Scoresby, W. (Junior), *Arctic Regions*, Vol. II, p. 211.

[2] Quoted by T. Southwell, 'Migrations of the Right-Whale, *B. mysticetus*,' *Natural Science*, June, 1898.

[3] Scoresby, W. (Junior), *Arctic Regions*, p. 211.

the *Calanus finmarchicus*, the Copepod, on which the Greenland whale principally feeds, come from the north-east and drift, like the ice, south-west through the Greenland Sea.

(2) These areas of green or ' dark ' water, termed ' feeding banks ' by the whalers, had a powerful attraction for the Greenland whales; they came up from the south-west in the spring, doubtless to meet them, and after accompanying them for considerable distances they resumed sooner or later their northward migrations to meet other ' feeding banks ' drifting, it is supposed, from higher latitudes towards the Greenland Sea.

(3) Some of the whales followed the drifting, and perhaps sinking ' food banks ' farther south-west than others; the first to turn and resume their northward migrations were the breeding females, next the immature whale of either sex, lastly the old males and perhaps non-gravid females. The first were seldom seen south of latitude 79° and seldom after the middle of May; the second seldom south of latitude 78° and seldom after the middle of June; the last with their long whalebone and fully developed diving powers on the other hand were sometimes found as far south as latitude 71° (near the Greenland Coast) and as late as the middle of August.

(4) In spring, owing to the direction of the current, areas of water green in colour, probably also drift out of the Barents Sea into the Greenland Sea, coming between Cape Look-out and Bear Island and drifting at first north-west and then south-west and keeping for a time in about latitude 76°.

(5) These areas of green water or ' feeding banks ' in latitude 76° attracted only the old males which were believed to be more indifferent to the absence of ice than the immature whales and breeding females.

The last two paragraphs are to some extent supposition but they seem to explain the facts connected with the fishing of latitude 76°; its prosecution in about the same latitude, in exposed situations and the frequent absence of ice. Moreover, Scoresby says ' Some rare instances have occurred, wherein they—the large whales—have been seen on the edge of the ice extending from Cherry (*i.e.* Bear) Island and Point Look-out, in the early part of the season.'[1]

Scoresby (Senior) commanded a whaling vessel sailing to the Greenland Sea from 1791 to 1822; Scoresby (Junior) from 1811 to 1823. Brief references to certain of these seasons may not be out of place.

---

[1] Scoresby, (Junior) *Arctic Regions*, Vol. II, p. 208.

The Seasons 1791—1798

According to the recently published log-books of Scoresby (Senior)[1] 1791, 1793, 1794, and 1797 were 'open' or ordinary seasons, that is to say there was much open water between the edge of the ice and the west coast of Spitsbergen and nothing to prevent a ship reaching latitude 80° or 81°. In seasons of this sort the catches of the ships usually consisted of a few large whales caught among the 'pack' or broken ice or in the open sea outside it.

1791 was a very unfavourable season and even Scoresby (Senior) returned to Whitby 'clean' (*i.e.* with nothing). He had the misfortune to lose two large whales: one in April in latitude 79° and one in June in latitude 76°.

1793 was a very open season and some of the ships were in open water north of Spitsbergen early in April and seeing whales. Scoresby (Senior) got two large whales in May in sight of Hakluyt's Headland and four (two large and two of medium size) in June in latitude 77½°.

In 1794 Scoresby got six large whales: two (one accompanied by a calf) in April near Hakluyt's Headland; one among the ice in May in latitude 78° and three, also among the ice, in June in latitude 76°. His catch yielded 120 tons.

In 1797, in May, the outskirts of the ice in latitude 79° were in an open condition and the ships able to reach the 'floes.' Scoresby got 16 whales which yielded 152 tons. Three had whalebone ten feet in length but two were 'suckers' or calves and one had whalebone only two feet in length. It is described as 'very fat' and was probably not long weaned. Many large whales were seen on April 26th in latitude 80° and on May 11th in latitude 79° many whales accompanied by calves.

1792, 1795, 1796, and 1798 were 'close seasons': there was a barrier of ice in latitude 76° connecting the ice of the Greenland Sea with that of the Barents Sea. This barrier, although an obstacle to the ships, prevented the swell of the ocean reaching and breaking the heavy ice in latitudes 78°, 79°, and 80°. Ships that succeeded in getting through this barrier could count on reaching the floes and making a good catch of immature whales in contrast with open seasons.

In 1792, 1795 and 1798, Scoresby (Senior) succeeded in getting through the barrier and reaching the floes in latitude 80°. In 1792 he got 18 whales which yielded 115 tons; all caught in May or June, in latitude 78° or 79° and all except

---

[1] Scoresby, W. (Junior), *Logbooks of Voyages to the Greenland Sea*, 1791-1798, 1801, 1817, 1820, and 1822. Issued in facsimile by the Explorers' Club of New York in 1916.

two of small or medium size. In 1795 he got 25, which yielded 144 tons; one was a 'sucker' (doubtless harpooned not for its own sake but in the hope of catching its valuable mother), 5 had whalebone only 2 or 3 ft. in length, and even the largest had whalebone only 8 ft. 8 in. in length. In 1795, he got 35, which probably yielded not more than 150 tons. All were caught in May and June in latitude 78°, 79°, or 80°. Four were 'suckers,' and 22 had whalebone less than 6 ft. in length. In 1792 and again in 1795, Scoresby saw a great many large whales in latitude 76° on his way north but they were among 'bay ice,' where whales are not easily caught.

In 1796, Scoresby instead of proceeding north prosecuted the fishing in latitude 76°. His catch consisted of 9 whales which yielded 113 tons. In May, Scoresby was hampered by 'bay ice'; he lost 6 whales and one that died under some sheets of 'bay ice' was only retrieved with the greatest difficulty. The *Mariah*, of Hull, got a '12 foot fish,' and *John*, of London, also got a very large whale.

Average length of whalebone of whales captured by Scoresby (Senior) in 1792, 1793, 1794, 1795, 1796, 1797 and 1798 ('suckers' or calves not included):—

1792	16	whales	between	8th May and 10th June, 6 ft. 6 in.
1793	6	,,	,,	3rd May and 14th June, 9 ft. 9 in.
1794	6	,,	,,	18th April and 7th June, 11 ft. 3 in.
1795	24	,,	,,	11th May and 25th June, 6 ft. 1 in.
1796	9	,,	,,	2nd May and 10th June, 9 ft. 6 in.
1797	14	,,	,,	24th April and 2nd June, 8 ft. 1 in.
1798	27	,,	,,	27th May and 19th June, 5 ft. 4 in.

According to W. Scoresby (Junior), 1803, 1813, 1814, 1815, 1816, and 1817 were open seasons, and the April fishing in latitude 80° more or less of a success.[1]

The Seasons 1803—1818

In 1814, owing to the direction of the winds the ice in latitudes 78°, 79° and 80° was in an open condition and many immature whales were killed. The seven Peterhead ships at the fishing returned with 1390 tons of oil—the produce of 163 whales, the *Resolution* heading the list with 299 tons—the produce of 44 more or less immature whales.

In 1817, much of the green water lay outside the ice, whales were seen in the open sea. Scoresby says the whales mostly occurred 'in a certain stream of cloudy water of a deep olive green colour,' which extended with some interruption from latitude 80° N. longitude 2° or 3° E. to latitude

[1] Scoresby, W. (Junior), *Arctic Regions*, Vol. I, p. 276.

74° longitude, 5° to 10° W. According to W. Scoresby (Junior) 1806, 1807, 1811, were close seasons.

In 1806, the barrier was 250 miles across and north of it and between, and the heavy ice was a ' water ' or open space 30 to 50 miles north and south. Scoresby (Senior) fell in with whales in latitude 80°, on May 28th. He returned with 216 tons, the produce of 24 whales.

As to 1807, Scoresby says : ' The margin of the ice was, however, pervious to a considerable extent, wherein, many large whales being seen, some ships made a successful fishery in latitude 75° or 76° ; other ships which persevered to the northward, and passed the barrier, likewise succeeded tolerably well.' The *Hope*, of Peterhead, presumably one of the former, returned on June 11th with 159 tons—the produce of 9 large whales ; while the *Enterprise*, another Peterhead ship, presumably one of the latter, returned on July 6th with 172 tons—the produce of 34 immature whales.

In 1811, few of the ships passed the barrier before May 26th. Whales occurred in great plenty (in latitudes 78° and 79°), and the fishery was generally good. According to statistics in my possession, the four Peterhead ships at the fishing returned in July with 752 tons—the produce of 112 mostly immature whales. The *Enterprise* headed the list with 31, which yielded only 183 tons.

The Season 1822

According to Scoresby (Junior),[1] 1822 was an open season, with the ice drifting quickly south-west and much open water between it and Spitsbergen. Scoresby (Junior) was successful at the ' south ' or summer fishing in June, July and August. Many whales were seen, and many ships took part in the fishing. Scoresby (Junior) got three large whales, all males, in August near the land. They yielded 60 tons of oil and three tons of ' bone.'

NEWS FROM THE MAGAZINES

The London Naturalist for 1935 is a very interesting number and contains among others the following articles : ' The Naturalist in the Laboratory,' by Prof. Sir F. Gowland Hopkins ; ' In British Mountain Flower Haunts,' by E. M. Payne (records of rare British alpines) ; ' British Butterflies in 1935,' by H. J. Burkill ; ' Notes on Dragonflies, 1935,' by E. B. Pinniger ; ' Plant Gall Records for 1935,' by H. J. Burkill (including a species of *Aulacidea* from *Picris echioides*, new to science) ; ' Jottings of a Naturalist in France and Italy,' by J. A. Simes (mainly Lepidoptera) ; ' The Natterjack Toad,' by L. G. Payne (with plate) ; ' Great Crested Grebe Report,' by P. A. D. Hollom ; ' An Identification Key to British Grey Geese,' by J. Berry ; ' Birds in the London area, 1935,' by C. S. Bayne ; and three others and supplement ; ' Botanical records of the London area ' (final instalment).

[1] Scoresby, W. (Junior), *Journal of a Voyage*.

HYPNUM LAMULOSUM B. & S., IN WEST YORKSHIRE. V.C. 64

CHRIS. A. CHEETHAM

THIS moss has been previously reported for Yorkshire, but the records from Leeds and Clapham were both errors and the Holwick Scar record is doubtful and needs confirmation. It is a moss of mountain rocks and is known from the Scotch Highlands, North Wales and the Lake District. While traversing the rough track between Beckermonds, Wharfedale and Harton, in Ribblesdale, on the watershed at 1,500 O.D. there are many drumlin-like hillocks and on one I noticed what appeared to be a small, neat growth of *Hypnum molluscum* Hedw., on further examination this proved to be plentiful over an area some 100 yards long by 40 yards wide. To all appearances the place is similar to many such hillocks in the district but these all carry *H. molluscum* Hedw. in plenty, whilst on the one I am dealing with *H. molluscum* Hedw. showed only on the outskirts and in very small quantity, while the *H. lamulosum* B. & S. is very plentiful and widespread. Towards the summit of the hillock there is a mixture of Ling, *Calluna vulgaris* and Mat grass, *Nardus stricta*, while on the summit is Cotton grass, *Eriophorum vaginosum* with some Sphagna species. Vegetation like this will give a down-wash free from lime, though this should be the same on many other places. Other plants are *Primula farinosa*, *Cochlearia alpina* and *Pinguicula vulgaris* with a little *Lycopodium selago* and *Selaginella selaginoides*. Among mosses occurring in fair quantity with *H. Lamulosum* B. & S. are *Brentelia arcuata* Dicks, *Bryum pseudo-triquetrum* Schwaeg., *Rhacomitrium lanuginosum* Brid. and *Fissidens osonundoides* Hedw.

In small quantities in various suitable places are *Polytrichum piliferum* Schreb., *P. commune* L., *Dichodontium pellucidum* Schp., *Campylopus atro-virens* De Not., *Dicranum scoparium* Hedw., *Ditrichum flexicaule* Hampe. var. *densum*, *Bryum pallens* Schwartz., *Trichostomum tortuosum* Dixon., *Mnium Lornum* L., *Thuidium tamariscinum* B. & S., *T. delicatulum* Mitt., *Hypnum Schreberi* Willd., *H. cuspidatum* L., *H. revolvens* Swartz., *H. cuspidatum* L., *H. revolvens* Swartz., *H. cupressiforme* L. and *Hylocomium squarrosum* B. & S. All these are in small quantities. The main mosses on the surrounding hillocks are *Hypnum molluscum* Hedw., *Trichostomum tortuosum* Dixon. and *Swartzia inclinata* Ehrh. and I have failed to find a single patch of *H. lamulosum* B. & S. on any of them. The slope of the hillock where the *H. lamulosum* B. & S. occurs faces north and it seems possible that the plant has found a suitable habitat here and spread around a centre.

ROOK ROOSTS IN THE MANCHESTER AREA

J. H. WARD

DAILY movements of Rooks in the Manchester area in the winter have been noted for some years. The following notes are contributed in the hope that they may be of use in establishing something definite as to the exact nature of these movements.

1. General Character

The daily movements are twofold. In the early morning birds are noticed in the southern parts of the Manchester area (*e.g.* Whalley Range and Stockport) travelling in a northerly direction, and later in the day a return movement is equally obvious. The explanation clearly is that the movements are of birds leaving and returning to a nightly roost.

2. The Roost

On the site and character of this roost my evidence is very fragmentary, but as far as I can discover the following sites have been used at different times :—

(*a*) CARR'S WOOD, between Wilmslow and Styal.—In December, 1930, and January and February, 1931, birds were seen coming to this every night from the directions of Cheadle, Stockport and Macclesfield, the Cheadle contingent being by far the largest. Carr's Wood has since been cut down, but it used to contain a rookery.

(*b*) WYTHENSHAWE PARK.—Here there is a rookery of considerable size, and birds seem to have roosted here on a variety of occasions. In January, 1932, they did so in a fir wood on the North side of the park, departing North and East in the morning. In the early autumn of 1932 the same wood, which contains the bulk of the rookery itself, was again used, but after the end of October it was gradually deserted in favour of roost (*c*). In November, 200 or 300 birds used it as a temporary roost before going on to (*c*). In February, 1933, however, there was again a roost in the park, 200 yards away from the former one, and apparently serving only a limited area to the North.

In October and November, 1934, birds were again roosting in the park, but this time on the South side of it.

(*c*) MONKSHEATH, between Macclesfield and Knutsford.—The exact site of the roost was not discovered, but it was apparently somewhere to the South of Monksheath in the Chelford direction. During the winter of 1932-33, thousands

of birds came there in a flight line over Wilmslow and Alderley Edge. Birds came there from Lymm (10 miles North-west), Hazel Grove and Disley (10 miles North-east), and from the far side of Manchester (15 miles to the North).

(*d*) WALTON?—In February, 1933, at a time when roost (*c*) was in use, rooks were seen moving from East to West at Lymm, and from North-east to South-west at Stretton. This would seem to point to a roost in the West, possibly near Walton. At one time (exactly when I do not know) there was a roost near Daresbury Hall, to the West of Stretton, and in March, 1936, birds feeding near Frandley were seen moving off in that direction at night, though previously they had always gone East.

I am told that for many years there has been a big roost at Tabley, but of this I know nothing.

3. FLIGHT LINES

(*a*) OUTWARDS.—From the Carr's Wood roost birds were seen passing over Stockport in a North-east direction at or very soon after sunrise. Birds also used to pass over Whalley Range on their way Northwards as early as 8 a.m. in mid-winter. Others used to be seen going North over Kingsway in the early morning.

(*b*) INWARDS.—A general southerly movement was observable over most parts of South and Central Manchester in the winter time. Birds could be observed passing over Chorlton-cum-Hardy from the direction of Brooks's Bar, over the Docks from the direction of Pendlebury towards Chorlton, along Kingsway towards Cheadle, over the University going South, over Princess Street going from North-west to South-east, and over the Exchange Station going South.

From these data the general character of the movements is clear. The outward flight is a sober, purposeful affair, but the return journey is made in a more leisurely manner, and time is occasionally ' wasted ' in soaring. In Whalley Range hundreds of birds used to settle in fields now built over, before going on their way, and the local rookeries used also to be visited on occasion.

4. FEEDING GROUNDS

It is possible, by continuing back the known flight-lines until open country is reached, to arrive at some conclusion as to the feeding grounds of the birds seen passing over Manchester.

In 1935 there was, as far as I could observe, no movement whatever over Sale, Stretford or Brooklands, and the influx

of birds into Longford Park from the North seemed to mark the West edge of the movement. The feeding grounds must therefore be on the open land to the North of the Manchester conurbation, in such districts as Pendlebury, Radcliffe and Reddish, which is where the Carr's Wood birds would strike open country. As may be seen from the 1-in. Map of the district, the hills close in on Manchester on the North and East, and the Rook is not a bird of the moorlands. One would have thought, therefore, that this would be poor country for them, compared with the Cheshire pastures. However, some parts of Cheshire at any rate, which seem *prima facie* attractive, are neglected completely by the Rook.

5. Dates and Times

The movements are, of course, at their height in mid-winter, but in 1933 they seemed to have commenced as early as July 10th, when large numbers of Rooks were observed in the evening near Whalley Range. We may perhaps compare in this respect, as indeed in general, the very similar roosting of the Starlings in the area ; in 1934 they began to roost in Platt Fields as early as June 10th.

In 1935 the large-scale movement over Chorlton-cum-Hardy ended in the second week of March, and at the same time serious building began at the rookeries. In 1933, however, large numbers were still visiting the Monksheath roost as late as March 25th.

On the outward journey, as has been noted, birds pass over Manchester at or very soon after sunrise. In mid-winter the inward movement was apparent in Whalley Range as early as 12 or 1, but the rush naturally comes between 2 and 4 in the afternoon.

6. Acknowledgements

My thanks are due to Messrs. A. W. Boyd, S. Cramp, and G. Marples for permission to use much of the data on which this paper is based.

Summary

(1) For some years past there have been Rook roosts in North Cheshire, frequented by birds from a wide area to the North of them in the winter months. It is doubtful whether they receive any considerable quantity from any other direction. In some cases these roosts coincide with rookeries.

(2) The feeding grounds of the birds are on the northern fringe of the Manchester conurbation (Pendlebury, Radcliffe, Reddish), but more information is needed on this point and on the question of the rookeries in these districts.

1936 July 1

(3) The roosting movement for some birds begins very soon after the nesting season is over, *i.e.* in July, reaches a peak in mid-winter, continues strong till the first half of March, but then in a great degree falls off.

(4) In mid-winter some birds at any rate leave the roosts before sunrise, and begin the return journey before noon. More time is taken over the return journey, birds settling on fields that lie on their course, indulging in aerial play and visiting the local rookeries.

SOME WEATHER EFFECTS IN 1936

CHRIS. A. CHEETHAM

THE heavy frosts of early February had a serious effect on several of the mosses, and some large patches of *Thuidium tamariscinum* B. and S., up to 2 square feet, were left bleached almost to white and were very noticeable in many places. Some other species suffered in a similar manner, amongst them being *Hylocomium triquetrum* B. and S., *H. splendens* B. and S., and *Brachythecium purum* Dixon.

I watched these mosses with some interest to see if they would regain the green colour, but up to the present, mid-June, this has not happened, and I presume the plants are quite dead. One has seen and heard of small tufts of mosses being damaged by frosts in previous years but I have never before seen such large masses all killed off. The previous open winters and warm summers may have induced a more luxuriant growth than is usual and which is more open to weather vagaries than the slower growth of more normal seasons.

At Whitsuntide we had a sudden lowering of the temperature and a frost which had a serious effect on many gardens and which killed off a great many of the new growths of the ferns. The Male-fern, *Lastræa Filix-mas* and the Lady-fern, *Athyrium Filix-fœmina* both showed evidence of this, on the young Ash trees in the hedgerows and on the lower branches of the taller trees the leaves were all black and dead, the upper branches often escaping, the frost being keenest in the hollows, in such places the young growth of the potatoes being killed.

I think the flowers of the Ash were over before this frost came and that the heavy fruitage which appeared to be possible this year, judging by the amount of flower, will not be injured, but this frost must be remembered when assessing the crop later on.

In Memoriam

PERCY FRY KENDALL, D.Sc., F.R.S.

By the death of Percy Fry Kendall on March 19th, 1936, the Yorkshire Naturalists' Union lost one of its most distinguished members and loyal supporters. He was a Past

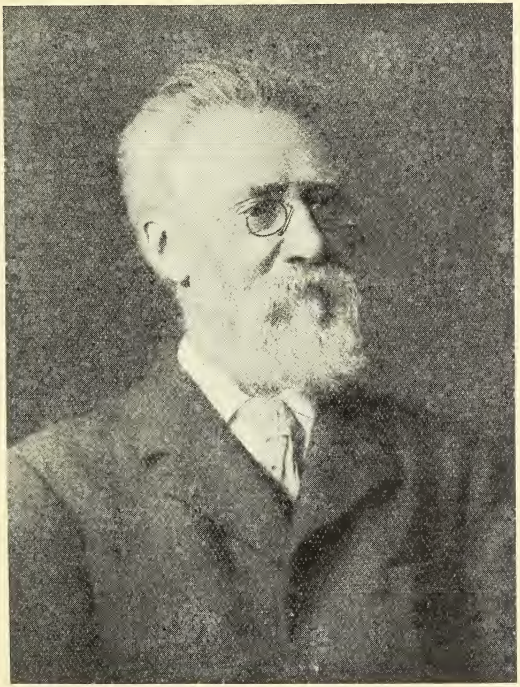


Photo by] [*Swaine, New Bond Street, W.1.*

President of the Union and for many years has been the Senior Vice-President.

He could rightly claim a place among such a body of amateur workers in that it could most truly be said of him that he pursued his studies in geology because he loved to do so.

Himself full of enthusiasm for his subject he had the splendid gift of imparting to others, not only knowledge, but what is far greater, the earnest desire to acquire more knowledge, and many of the older members of the Union can testify to the help and encouragement which he was ever ready to give them. They will feel that by his passing they have suffered a double loss, for he was at once their teacher and their friend.

He was born at Clerkenwell in 1856, and early evinced a predilection for geology, gaining the Silver Medal of the old Science and Art Department when only eighteen years of age, the only occasion on which such distinction was conferred upon a student of geology.

In the 70's he attended a course of University Extension lectures by Professor Sollas, and as he has often told the writer it was at that time he made the decision to take up geology as his life interest, so inspired had he been by that eminent geologist who happily is still among us.

In this connection it is interesting to recall that the Leeds Geological Association, of which Kendall was more than once President, was founded as a result of a course of lectures given in Leeds by Professor Sollas in 1874, so that Professor Sollas has had a most important influence upon Yorkshire Geology.

Kendall entered the Science School, South Kensington, in 1883, and here he came under the influence of two great teachers—Judd in Geology and Huxley in Biology.

Huxley made a deep and lasting impression on him, but, he still remained true to his first love, though he was naturally strongly attracted to the biological aspects of geology, and his earliest work was upon the fauna of the Pliocene deposits of East Anglia and St. Erth in Cornwall.

As his first research work was in East Anglia so was his last, for after his removal to Frinton in Essex in 1928 he again took up the study of the Crag Fauna and in 1931, published a paper *The Red Crag of Walton-on-the-Naze*.

From South Kensington, Kendall went to Owen's College, Manchester, where he was Berkeley Fellow, and was later appointed Assistant Lecturer in Geology with Professor (later Sir) W. Boyd Dawkins.

By this time he had become interested in Glacial Geology and at the British Association Meeting in Manchester, in 1887, he became acquainted with the brilliant American glacialist, the late Professor Carvill Lewis, whose interpretation of certain topographical features as being due to the action of land-ice was new to the scientific world and by no means generally accepted. Kendall however 'saw the light' and applied himself with renewed vigour to glacial problems.

In the historic conflict between the adherents of the two rival theories—Land-ice and Submergence—Kendall was one of the protagonists, and no one more than he, contributed to the final triumph of the Land-ice theory. A veteran Scottish geologist who remembered the struggle spoke to the writer of Kendall as a 'bonnie fechter.'

In 1891 he was appointed part-time lecturer in Geology at the Yorkshire College, and in 1904, when the College became the University of Leeds, the chair of Geology, which

had been in abeyance after the departure of Professor Green to Oxford, was resuscitated in his favour.

On his coming to Yorkshire he at once took up the investigation of the Glaciation of the Cleveland Hills. After six years work he was still without a solution to many of the anomalous physical features of the area, and then suddenly, as he has described to the writer on the ground, it came to him as he was walking through one of those enormous ' dry valleys ' which trench Fylingdales Moor.

It was not however, until 1902 that he presented his paper ' Glacier Lakes in the Cleveland Hills ' to the London Geological Society. This classical paper has been the starting point and inspiration to a numerous band of amateur geologists who have ' gone and done likewise ' in other parts of the British Isles.

It was always a great delight to Kendall to lead parties of naturalists over this area and, as the records show, the Yorkshire Naturalists' Union, Yorkshire Geological Society and many others, visited many different parts of North-east Yorkshire under his guidance.

He also carried out investigations on similar lines in Scotland, Isle of Man, North Wales and elsewhere, and illumined whatever he touched.

For the Royal Commission on Coal Supplies, 1901-5, presided over by that great Yorkshireman, Lord Allerton, he was asked to report upon the Yorkshire, Nottinghamshire and Derbyshire coalfield. By applying the, by that time, well-established principle in tectonics of ' posthumous folding ' he concluded that the area of the unproved coalfield was 3,885 sq. miles, that of the exposed coalfield being 700 sq. miles. Details of the arguments cannot here be given but the report in which they are embodied is most stimulating, and illuminating, and has done much to encourage explorations for coal in the eastern concealed coalfield.

During his last years at the University the writer was associated with him in the investigation of the abnormalities which all too frequently occur in coal seams and the adjacent beds of sandstone and shale. Many a day was spent in the old abandoned workings of pits, often difficult of access and frequently dangerous by reason of the bad roof and accumulation of gas. Kendall, however, nothing daunted, recorded his observations with the same precision as he would have done above ground. A comparison of the phenomena encountered, with the records of those associated with the passage of an earthquake wave through modern alluvial deposits, such as sand-blows, sandstone dykes, etc., led to the conclusion that in the Coal Measures were to be found ' fossil earthquakes,' an idea which is receiving confirmation by investigation in other sedimentary rocks. In collaboration with

Mr. H. E. Wroot, a former President of the Union, he wrote the *Geology of Yorkshire*, in the reading of which, even those whose knowledge of geology is very limited, find pleasure and edification.

He was the recipient of many honours in recognition of his distinguished services to science.

By the Geological Society of London he was awarded the Lyell Fund in 1895, and in 1909 followed the Lyell Medal.

It was a fitting coincidence that he should have received this at the hands of Professor Sollas, who was at that time President of the Society.

When the British Association visited Hull, in 1922, Professor Kendall was President of Section C (Geology), and he took as the subject of his address ' The Physiography of the Coal Measure Swamps ' in which he brought together many new facts, culled from his investigations, which throw much light upon the conditions attendant upon the accumulation of the Coal Measures.

He retired from the Chair of Geology in the University of Leeds in 1922, and four years later the University conferred upon him the degree of Doctor of Science *honoris causa*. In 1924 he was elected a Fellow of the Royal Society.

He leaves a widow and two sons. The elder son, Mr. Percy F. Kendall, B.Sc., is lecturer in Zoology at the Agricultural College in Edinburgh, and the younger son, Mr. Geoffrey P. Kendall, B.Sc., is with the publishing firm of George Newnes, directly associated with the publications dealing with wireless matters.

Though for some years before his death he had been resident in or near London he retained a lively interest in the Scientific Societies in Yorkshire, and until the last year or so came occasionally to address them. He will be greatly missed by members of the Yorkshire Naturalists' Union.—A.G.

The Entomologist for June contains ' The collection and analysis of records of migrating insects, British Isles, 1931-1935,' by Mrs. K. J. Grant ; ' British Lepidoptera Collecting, 1935,' by C. G. M. de Worms ; ' Bulgarian Rhopalocera, June and July, 1935,' by P. H. Thomas ; ' Notes on Braconidæ : XV—Microgasterinæ,' by C. Morley ; ' Recent Literature ' ; and several notes and observations.

The Entomologist's Monthly Magazine for June contains ' Systematic Notes upon British Aquatic Coleoptera,' by F. Balfour-Browne (Bibliography) ; ' *Polydrosus pulchellus* Stephens, to be reinstated in specific rank, with a variety new to Britain (Coleoptera),' by K. G. Blair ; ' Notes on the genus *Lobogestoria* Reitt. (Coleoptera, Colydiidæ),' by H. E. Hinton ; ' On *Hydoporus intermixtus* Walk. (*Dytiscidæ*) ' by J. Balfour-Browne ; ' The ants of the Azores,' by H. Donisthorpe ; ' The Parasites of British Birds and Mammals : VIII—Some additional records of bat parasites,' by G. B. Thompson ; ' The Spruce Cone Bug, *Gastrodes abietis* Linn. (Hemiptera, Heteroptera, Lygaeidæ),' by A. E. Aitkins ; and several short notes.

RECORDS

GREY PLOVER (SQUATAROLA S. SQUATAROLA) IN HALIFAX DISTRICT

In the article ' Autumn Migrants on the Yorkshire Reservoirs ' in *The Naturalist* for February, 1936, pages 25-30, it is stated on page 28, 16th line from the bottom, that ' the last record of the grey bird ' (grey plover) in the parish of Halifax, ' was as far back as 1865.' This is incorrect. The last record was in 1899, the year given in two previously printed lists.—W. Greaves.

MYOSURUS MINIMUS L. IN EAST YORKSHIRE

On May 12th I received fresh specimens of this plant from Mr. James Kendal, of Selby, who first observed it last year at Aughton, near Bubwith. A few days later I visited the locality with Mr. G. A. Nelson, F.L.S., and saw the plant growing plentifully in a sandy lane, where it appears to be native. There is no previous record of its occurrence in V.C.61.—W. A. Sledge.

NEW W.R. STATION FOR TRIENTALIS

A friend of mine, living on a new housing estate cut out of the woods at Cookridge, near Leeds, told me he had found a pretty wild flower unknown to him, in the woods.

He took me to the spot on May 21st, and there we found *Trientalis* in great quantity. Hundreds of specimens were in flower near one of the main paths, on both sides, and away from the path on one side it was scattered about the wood for a hundred yards at least.

To the best of my knowledge this is a new station for *Trientalis*.—H. Foster.

COLEOPTERA RECORDS

The following additions to the Yorkshire List have been captured recently by the writer :—

†*Crataraea suturalis* Mn. Beckhole, 9/5/36. In haystack refuse. This rare northern beetle is locally common in Cumberland, and has been taken in Northumberland, whilst it is abundant in Lancashire and Cheshire.

†*Atheta inquinula* Gr. Skelder, 20/3/36. In sphagnum.

†*A. reperta* Shp. Sleights, 17/5/36. Has been taken in Cheshire.

†*A. hypnorum* Kw. Sleights, 17/5/36. Has been taken in Lancashire.

†*Leptusa angusta* Aub. Mulgrave Woods, 11/4/36. Has been taken on the Durham side of Teesdale.

In my previous note in *The Naturalist*, May, 1936, p. 116, one or two typographical errors occurred, viz. :—

Athera should read *Atheta*.

Abomariaabra should be *Atomariaatra* Hb.

My thanks are due to H. Britten, Senr. and W. J. Fordham for the determination and distribution respectively.—H. Britten.

YORKSHIRE NATURALISTS AT DROP CLOUGH

On this first excursion of the year we were fortunate to have a good attendance of members and friends from Oldham and neighbourhood to swell our numbers and a good audience assembled to hear the Rev. T. A. Jeffries' talk on *Molinia cærulea*, a grass he has made a careful study of in this area, unfortunately a persistent heavy shower interfered to stop would-be questioners and cut short his most interesting chat. We had arrived at the top waterfall when this happened and luckily headquarters and tea were near at hand. The date proved too early for most migrant birds or for flowering plants and insects, but the Bryologists were rewarded by some interesting species, amongst them being the moss which seems to grow upside down regardless of the usual rule ; this is *Tetraphis browniana* Grev. and a wonderful show of fruits of *Orthodontium gracile* Schwaeg. var. *heterocarpa* Wats., this is quite characteristic of peaty areas in this South-west corner of the county and most unaccountably absent in the North-west.

There was a fine mass of London Pride (*Saxifraga umbrosa*) close to the waterfall, and Mr. Wattam stated that it had probably been introduced some four or five years ago and is increasing quickly.

A few flies were collected, the following is a list of the species :—

Tanypus fuscus (Mg.).
Prodiamesia olivacea (Mg.).
Trichocera hiemalis Deg.
Dicranota bimaculata Schum.
Rhyphus fenestralis Sop.
Liancalus virens Scop.
Mydaea lucorum Fln.
Chortophila signata Brische.
Scatophaga stercoraria L.
Sepsis cynipsea L.

Flowering Plants : Mr. W. E. L. Wattam writes : The tardiness of the springtime was only too well evidenced. Only two days prior to the excursion night frosts of exceptional severity had kept in check the vegetation of the Clough, whose full charms are seen to best perfection at midsummer. The Clough is one of the numerous valleys which radiate in a north-westerly direction from the upper portion of the Colne Valley within the boundaries of the Urban District of Marsden. The stream which traverses the Clough has its origin near Cupwith Hill, about 1,300 feet O.D., and after passing for some distance over moorland, enters by the ' Drop,' and then pursues its course over a natural floor of Pule Hill Grit in a series of cascades, finally emptying into Sparth Reservoir. Working upwards it is noticeable that as far as the small offshoot clough to the right, both sides are wooded. Owing to the denser grouping of the trees on the right bank, the nature of the ground which they cover, and the severe conditions set up against the natural laws governing plant growth, it is not surprising to find that very few of the trees covering this particular area of ground attain any great size. On the left side, even to the verge of the rocky embankment, the trees have grown to greater proportions, and fine examples of oak, beech and sycamore adorn this portion of the Clough. Taking the tree flora as a whole, the oak is easily the dominant species, with beech, sycamore, and goat willow as subdominants, whilst mountain elm, hazel, mountain ash, alder, scot's pine and birch also occur. Dealing briefly with the ground vegetation denizening the beds of decayed humus and peat upon the alternating grits and shales, it is noticeable that large beds of bilberry clothe each side of the Clough, especially luxuriant on the steep, stony embankment on the left. Ling also is not uncommon, and with it are the fine and cross-leaved heaths and black crowberry in variable quantities. When noting the distribution of the grasses, the grit and shale areas are distinctly mapped by *Deschampsia flexuosa* in the first instance, and by *Holcus mollis*, with a slight intermingling of *H. lanatus* in the latter case. The bog areas are likewise denoted by the excellent growth of *Molinia cærulea* and *Aira cæspitosa*, while in old pastures

sloping down to the Clough, *Agrostis vuglaris* and *Nardus* speak of the sandy clay nature of the soil. Among the other plants which occur are :—

Upright Crowfoot.
Wood Anemone.
Great Burnet.
Burnet Saxifrage.
Ladies Mantle.
Broad-leaved Hawkweed.
Autumnal Hawkbit.
Long-rooted Cat's-ear.
Dewberry.
Harebell.
Common and Dwarf Furze.
Foxglove.
Golden Rod.
Yarrow.
Cuckoo Pint.
Marsh Violet.
Wood Violet.
Common Bramble.
Barren Strawberry.
Smooth Heath Bedstraw.
Black Knapweed.
Wild Hyacinth.
Dog's Mercury.
Tormentil.

Turning attention to the banks of the stream until the head of the Clough is reached, a flora typical of our local moorland cloughs is met with.

Among the additional plants which were noted, were :—

Lesser Celandine.
Lesser Spearwort.
Hairy Bitter Cress.
Ladies Smock.
Creeping Cinquefoil.
Wild Raspberry.
Golden Saxifrage.
Water Blinks.
Milkwort.
Greater Stitchwort.
Marsh Stitchwort.
Meadowsweet.
Cow Parsnip.
Wood Angelica.
Wood Loosetrife.
Ivy.
Marsh and Common Valerians.
Wood Germander.
Devil's-bit Scabious.
Broad-leaved Garlic.
Marsh Forget-me-Not.
Luzula sylvatica.
L. pilosa.

The old pastures to the right, just beyond the juncture of the branch clough, were at one time reclaimed from the moor, as evidenced by the re-growth of bilberry and heaths, owing to lack of proper cultivation. The basal half of each pasture is a swamp conquered by *Juncus effusus, J. conglomeratus, J. uliginosus* var. *supinus, J. acutiflorus,* and *J. squarrosus.* Here also occur Ragged Ribin, Marsh Bedstraw, Cow Wheat, Marsh Pennywort, Blue Bugle, Lousewort, Spotted Palmate Orchis, Bog Asphodel and *Molinia cærulea* with its var. *breviramosa.* On the rocky ledges of the ' Drop ' are found Butterwort, Wall Lettuce and Mountain Willow Herb.

LICHENS : Mr. Wattam writes : The species observed are typical of the gritstone valleys of the South-west portion of our county and apparently acclimatised to the smoke conditions so prevalent. Those noted were *Parmelia saxatilis* Ach., *Lecanora muralis* Schaer., *L. varia* Ach., *L. symmictera* Nyl., *L. conizæa* Nyl., *Cladonia pyxidata* Hoffm., *C. fimbriata* Fr., *C. gracilis* Willd., *C. coccifera* Willd., *Lecidia coarctata* Nyl., *L. contigua* Fr., *L. granulosa* Schaer., was well in evidence as the first to denizen the burnt areas of moorland and rough pastures, several patches being crowded with dark brown apothecia.

Mr. W. E. Bramley says the following is a list of Fungi collected in the Clough : *Polyporus betulinus* (Bull) Fr., *Stereum hirsutum* (Willd.) Fr., *Stegia ilicis* Fr., *Mollisia cinerea* (Batsch) Karst., *Valsa hoffmanni* Nits., *Phoma herbarum* West., *Leptothyrium litigiosum* (Desm.) Sacc. on Bracken, *Ovularia obliqua* Oudem. on Rumex, *Liceopsis lobata* Torrend.

I am indebted to Mr. T. Petch for determining several of the above.

BRYOLOGY : Mr. F. E. Milsom writes : In general, the bryophytes seen were typical of a clough in the South Yorkshire Millstone Grit area. Growth was backward for the season. The aquatic species were water-worn and shewed very little new season's growth. Unusual evidence was noticed of injury to mosses by frost. In some cases, whole stems had lost chlorophyll, the capsules of *Orthodontium gracile* var. *heterocarpum* being also injured. A full list is given of all species noted :

Mosses

Tetraphis pellucida Hedw.
T. Browniana Hedw.
Polytrichum commune L.
Catharinea crispa James.
Ditrichum homomallum Hampe.
Dichodontium pellucidum Schimp.
D. flavescens Lindb.
Dicranella heteromalla Schimp.
D. heteromalla Schimp., var. *interrupta* B. & S.
D. squarrosa Schimp.
Blindia acuta B. & S.
Fissidens pusillus Wils.
F. osmundoides Hedw.
F. adiantoides Hampe.
Zygodon mougeotii B. & S.
Philonotis fontana Brid.
Orthodontium gracile Schwaeg. var. *heterocarpum* Wats.
Webera nutans Hedw.
W. proligera Bryhn.
W. albicans Schp.
Bryum pseudotriquetrum Schwaeg.
Mnium hornum L.
M. punctatum L.
Heterocladium heteropterum B. & S.
Brachythecium plumosum B. & S.
Hyocomium flagellare B. & S.
Eurynchium praelongum Hobk.
Plagiothecium elegans Sull.
P. sylvaticum B. & S.
Hypnum commutatum Hedw.
H. ochraceum Turner.

Hepatics

Conocephalum conicum (L.) Dum.
Pellia epiphylla (L.) Corda.
Alicularia compressa (Hook.), Nees.
Eucalyx obovatus (Nees) Breidl.
Aplozia pumila (With.) Dum., var. *rivularis* Schiffn.
Gymnocolea inflata (Huds.) Dum.
Cephalosia bicuspidata (L.) Dum.
C. bicuspidata (L.) Dum., var. *lammersiana* (Hub.) Breidl.
Calopogeia Trichomanis (L.) Corda (c.fr.).
Lepidozia reptans (L.) Dum.
Diplophyllum albicans (L.) Dum.
Scapania dentata Dum.
S. dentata Dum., var. *ambigua* De Not.
S. undulata (L.) Dum.

Mr. F. B. Stubbs writes : With the help of Mr. Fred Taylor and Mr. A. B. White, I have been able to sum up the observations of the Oldham people on the Drop Clough excursion. The Clough seemed little better than others in the district, and was distinctly poor for birds. The following list will probably overlap with others you have had, but you will be able to use those parts which have not been already given.

Birds.—Twite : three seen on the edge of the moor just above the Drop ; Dipper : one seen in the lower part ; Stock Dove : one flying over the clough and evidence of a nest in an inaccessible part of an old quarry at the lower end ; Shoveller : a drake seen by two members after tea on the reservoir between the Clough and the canal ; Sandpiper : one seen by the side of this reservoir in the morning.

Shells.—Two species only were noted, *Limax laevis* and *Vitrea crystallina*.

Alga.—*Sphaerocystis* (Chodat), species not known, growing in a stagnant pool in the peat.

P.S.—A *brown* hare was seen just above the drop ; the alpine hare, very common a few miles away (Greenfield), rarely appears in Marsden direction.—F.B.S.

RECORDS OF YORKSHIRE COLEOPTERA

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H., AND
GEO. B. WALSH, B.Sc.

In the following records W.J.F. is responsible for the notes as to distribution, and G.B.W. is responsible for the capture of the insects, their identification (unless otherwise stated), and any comments. The order and nomenclature are those used by Professor Sir T. Hudson Beare in his Catalogue of 1930. All the species recorded from Bubwith and Yedingham were taken in flood-refuse, most of the former in 1931 and of the latter in 1935. The use of an asterisk indicates a new County record, while a dagger indicates a new Vice-County record.

Notiophilus substriatus Water. Uncommon at Yedingham. (Local in Yorks.).

†*Helophorus affinis* Marsh. Uncommon at Yedingham. (Rare. New to V.C. 62.).

Megempleurus rugosus Oliv. Uncommon at Yedingham. (Local).

Hydraena rufipes Cutis. Uncommon in Scalby Beck. (Rare. Only taken so far in Yorkshire in the Scarborough area).

Aleochara intricata Mann. Rare at Yedingham. (Rare. Only recorded from Whitby.)

Atheta vaga Heer. Abundant at Bubwith. (*Fide* Mr. J. H. Keys.) (Local. Few localities in Yorks.)

A. malleus Joy. Common at Bubwith. (Rare. Only from V.C. 61 and 62.) It would seem probable that records of these and other common species have not been made owing to difficulties of determination, and that the species are not really rare in Yorkshire.

**A. hygrobia*. (Thom *magniceps* Sahlb.). (*Fide* Dr. M. Cameron). A single specimen at Bubwith. (New to Yorkshire. Rare, but widely distributed in Great Britain and Ireland.)

**A. laticeps* Thoms. Also rare at Bubwith. (New to Yorkshire. The most northerly record. Very rare throughout Britain.)

A. graminicola Grav. Common at Bubwith. (Local in V.C. 61-63.)

**A. graminicola* var. *brunneipennis* Thoms. A form with brown elytra, not common anywhere. A few specimens at Bubwith. (*Fide* J.H.K.) (New to Yorkshire.)

†*A. aterrima* Grav. Fairly common at Bubwith. (Rare. New to V.C. 61.)

Mycetoporus splendidus Grav. A single specimen on the moors at Saltersgate. (Rare.)

Quedius rufipes Grav. Yedingham. (Scarce.)

Staphylinus brunnipes Fabr. In moss in Beedale, near Scarborough. (Widely distributed in Yorkshire.)

S. aeneocephalus De Geer. (*S. str.*) Yedingham, and on the coast at Spurn. This seems to be the common Yorkshire species, in fact.

S. cupreus Rossi. requires confirmation as a county record.

Philonthus addendus Sharp. Yedingham. (Rare.)

†*P. albipes* Grav. Yedingham, not common. (Rare. New to V.C. 62; only one record from Allerthorpe.)

P. sanguinolentus Thoms. Yedingham, not common. (Local. V.C.'s 61-63.)

Xantholinus longiventris Heer. Common at Yedingham. (Local.)

Stenus canaliculatus Gyll. By the riverside at Sinnington. (Rare.)

S. carbonarius Gyll. Uncommon at Bubwith. (Rare.)

**Aclypea undata* Mellié. Several specimens on a keeper's tree at Buttercrambe on the Y.N.U. excursion in June, 1935. (New to Yorkshire ; apparently not hitherto recorded north of Notts. A rare species.)

Colon serripes Sahlb. (*Fide* Mr. H. Donisthorpe.) A single specimen by the side of Scalby Beck. (Rare. Recorded in Yorkshire only by Lawson from the Scarborough district.)

Euplectus sanguineus Denny. In cut grass, not common, at Scarborough. (Very local. Taken by Lawson at Scarborough.)

Trichopteryx fascicularis Herbst. Common in cut grass at Scalby. (Local.)

T. intermedia Gill. With the preceding species. (Rare.)

Adalia 10-*punctata* L., *Ab. centromaculata* Weise, *Ab. subpunctata* Schrank, *Ab.* 6-*punctata* L., all more or less common at Allerthorpe.

†*Scymnus rubromaculatus* Goeze. Several specimens on Allerthorpe Common. (Rare. New to V.C. 61. Only taken by Lawson at Scarborough.)

Cerylon ferrugineum Steph. Common under bark in Sawdon Dale, near Scarborough. (Rare.)

Hister 12-*striatus* Schrank. Rare at Yedingham. (Local.)

Meligethes fulvipes Bris. Fairly common by sweeping in Forge Valley. (Very local.)

M. ovatus Sturm. On flowers in Ellerburn. (Rare. Only from V.C.'s 61-62.)

Cychramus luteus Fabr. var. *fungicola* Heer. Common by sweeping in Beckdale, Helmsley. (Local.)

Enicmus histrio Joy. Yedingham. (Rare.)

Antherophagus nigricornis Fabr. Ellerburn. (Rather local.) This species seems to be widely distributed in the country, but rarely to occur in any numbers.

Atomaria linearis Steph. Yedingham. (Rare. Only recorded from the Scarborough district.)

†*Scaphidium* 4-*maculatum* Oliv. Under bark in Sawdon Dale. (Local.)

Scaphosoma agaricinum L. Found with the preceding species. (Local. New to V.C. 62.)

†*Megatoma undata* L. A specimen found in a cupboard in Scarborough. (Very local. New to V.C. 62.)

Aphodius depressus Kug. In dung on the moors at Saltersgate. (Rather local.)

Throscus dermestoides L. By sweeping on Strensall Common. (Local.)

Sericus brunneus L. A female on the moors at Saltersgate. (Rare.)

Haplocnemus nigricornis Fabr. A single specimen on pines on Scawton Moor. (Confirmed by Mr. Keys.) (Rare. Only recorded from—' Yorkshire '—Harker, and from Ripon—Waterhouse.)

Ernobius mollis L. By beating dead timber in Raincliffe Woods, Scarborough. (Local.)

Pogonochaerus hispidulus Piller. By beating in Forge Valley and Hayburn Wyke. (Rather local.)

Plateumaris discolor Panz. By the borders of a marshy pool in Biller

Howe Dale. (Very local. Its headquarters in Yorkshire appear to be the Whitby and Scarborough Moors.)

†*Cryptocephalus pusillus* Fabr. By sweeping at Hovingham; and **Ab. marshami* Weise. In *copula* with the type form. (Very local. Type new to V.C. 62, and *Ab.* new to Yorkshire.)

C. labiatus L. Buttercrambe. (Uncommon, but widely distributed.)

Aphthona herbigrada Curt. Common by sweeping *Helianthemum* at Hovingham. (Rare.)

Sphaeroderma testaceum Fabr. Hovingham, by sweeping. (Local.)

Mantura matthewsi Curt. With *A. herbigrada* at Hovingham. (Very local. Only recorded by Lawson from Forge Valley.)

Psylliodes cuprea Koch. Staintondale. (Local. Only from V.C.'s 61 and 62.)

Anthribus variegatus Geoffr. Common by beating wind-thrown firs in Forge Valley. (Rare.)

†*Apion spencei* Kirby. Richmond. (Local. New to V.C. 65.)

A. loti Kirby. By sweeping at Hovingham. (Local.)

Polydrosus cervinus L. (*S. str.*) Allerthorpe Common. (Widely distributed.)

Cheorrhinus exaratus Marsh. By sweeping at Saltersgate. (Very local.)

Dorytomus rufulus Bedel. On willows in Forge Valley, Hayburn Wyke and Allerthorpe Common. (Very local.)

Stenocaris fuliginosus Marsh. Yedingham. (Very local.)

Rhinoncus castor Fabr. Saltersgate. (Very local.)

Hylastes cunicularius Er. A single specimen at Buttercrambe Wood, confirming Mr. Hincks's record. (Rare.)

Dryocoetes autographus Ratz. One specimen in Beedale. (Very rare, confirming Lawson's Scarborough record.)

REVIEWS AND BOOK NOTICES

Now for Creatures! by **Shelby Shackelford,** pp. x+130, with drawings by the author and word pictures by R. Douglas Cox. (Charles Scribner's, Sons), 6/-. This is an American book, refreshingly original, about butterflies and moths, creatures of the ponds, and ants. A small boy is introduced to natural history in the best possible way by wise parents, who use his childish questions as the basis of their teaching. Mrs. Shackelford has written a book which many parents will be delighted to have. It can be read aloud, and the information given is accurate and entertaining. The numerous bold black and white illustrations are admirably adapted to the text.

Birds of Cape York Peninsula, by **Donald F. Thomson,** pp. 82, with 15 plates, stiff paper cover. (Angus & Robertson), 1/6 post free. The Commonwealth of Australia has set aside funds 'to cover the cost of printing and publishing highly meritorious scientific memoirs which otherwise would not become generally available.' One outcome of this admirable scheme is Dr. Donald Thomson's interesting memoir on the birds of that remarkable portion of Queensland known as Cape York Peninsula. The author has made three expeditions to the region mentioned and has collected a large quantity of valuable data relating

to the birds found. This pamphlet consists of Ecological Notes, Field Observations, and a Catalogue of specimens collected. It is a most useful contribution to the ornithological literature of Australia.

British Immigrant Butterflies and Moths, pp. x+5 illustrations in colour. (British Museum, Natural History), 9d. The long migration flights of certain species of lepidoptera are well known to entomologists, but many naturalists will learn of the phenomenon with surprise. This little handbook introduces the subject and gives a description of certain butterflies and moths which perform regular migrations, and it concludes with five beautifully printed plates in natural colours. Naturalists interested are invited to send up to South Kensington, records of observed migrations. A specimen record card is included in the pamphlet and further information can be obtained by application to the Keeper of Entomology, British Museum (Natural History), London, S.W.7.

Guide to the Exhibition Galleries of Geology and Palæontology at the British Museum (Natural History), pp. viii+74 illustrated by two plates and 15 text figures (Second Edition), sold by British Museum (Natural History), Cromwell Road, S.W.7. Price 1/-. This is a new and revised edition of the guide written by the late Dr. F. A. Bather in 1923. It is a very good introductory account of the galleries at South Kensington in which are displayed plant and animal fossil remains. Like most of the British Museum publications it is a useful guide to the subject as well as to the Museum specimens.

Pride of Lions, by **B. F. Jearey,** pp. 160, with 68 photographs by the author. (Longman's), 10/6. The Kruger National Park of South Africa now includes most of the North-eastern corner of the Transvaal and is one of the finest wild-life reserves in the world. In it big game can be studied at fairly close quarters by anyone who is prepared to abide by the rules. The only weapon allowed is the camera, and Mr. Jearey has spent years in obtaining there some of the finest animal photographs we have ever seen. Most of his pictures are of lions, but one of the best in the book is that of a herd of zebra. The author has had his exciting moments and knows how to describe his adventures in a realistic manner. Every bird and animal photographer should make a point of seeing this book.

Monkeys, by **Rose Fyleman,** pp. viii+108, with 12 photographic illustrations. (Nelson), 2/6. This is a wonderfully cheap half-crown's worth. The book is packed with information and anecdotes relating to monkeys and apes, and the style is most entertaining. Miss Fyleman describes a large number of species and her stories have been gathered from the writers of all ages.

The Geological Map, by **Kenneth W. Earle,** pp. viii+96, with 41 diagrams. (Methuen), 3/6. The author's nine chapters deal with outcrops, unconformities, folds, faults, formation of inliers and outliers, igneous and metamorphic rocks, geological map reading and section drawing, and descriptions of representative published geological maps. In order to keep the price of the book within reach of the young student, the author has wisely omitted large scale maps, assuming that the serious reader will have access to the maps of the Geological Survey to which there are frequent references. His solid model drawings are very clear and abundantly illustrate the text. The book is an admirable introduction to the subject and should prove most helpful to the beginner.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By Elizabeth Barnard Black. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post-free 4/-.

A story that faithfully depicts the characteristics of Yorkshire folk, their wit, their capacity for driving a hard bargain, their love of the moors and sea and (for the time is a hundred years ago) their passionate love of smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Happy love and terrible tragedy are intermingled, the whole being relieved by humorous incidents, some of which take place at Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,
5 Farringdon Avenue, London, E.C.4.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. Blair, B.Sc., F.R.E.S. — R. W. Lloyd, F.R.E.S.
H. G. Champion, M.A., F.R.E.S. — F. Laing, M.A., B.Sc., F.R.E.S.
J. E. Collin, F.R.E.S. — H. Scott, M.A., Sc.D., F.L.S.
J. J. Walker, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

NATHANIEL LLOYD & CO., LTD., BURRELL STREET, LONDON, S.E.1.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

THE COUNTY OF THE WHITE ROSE

By A. C. PRICE, M.A., Formerly Scholar of Pembroke College, Oxford. 415 pages, Crown 8vo, with 70 illustrations and a folding map of the Three Ridings. 2/6 net, or post free 2/10.

This is the only book of a reasonable size which deals at all adequately with the History of Yorkshire. It will prove a storehouse of information to all who are interested in castles, abbeys, churches, battlefields, etc., of which Yorkshire is so richly endowed. For rambles, or more extended tours in Yorkshire, the book will prove of great value.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,

5 Farringdon Avenue, London, E.C.4.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by :—Professor JAMES RITCHIE, M.A., D.SC., F.R.S.E.; EVELYN V. BAXTER, F.Z.S. H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.SC., F.R.S.E.; ANDERSON FERGUSSON, F.R.E.S.; A. R. WATERSTON, B.SC.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London. July, 1936.

505.42

AUGUST, 1936

No. 955
No. 728 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

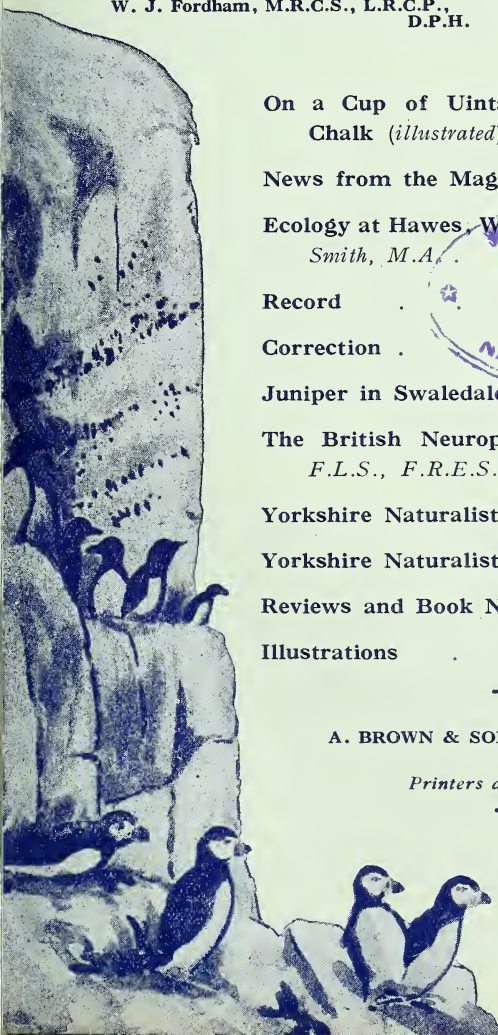
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

	PAGE
On a Cup of Uintacrinus from the English Chalk (*illustrated*)—*A. G. Brighton, M.A.*	169-172
News from the Magazines	172
Ecology at Hawes, Whitsuntide, 1936—*W. Malins Smith, M.A.*	173-176
Record	176
Correction	176
Juniper in Swaledale—*A. Malins Smith, M.A.*	177-178
The British Neuroptera—*J. M. Brown, B.Sc., F.L.S., F.R.E.S.*	178-179
Yorkshire Naturalists at Hawes	180-188
Yorkshire Naturalists at Aberford	189-192
Reviews and Book Notices	192
Illustrations	169, 171

SMITHSONIAN INSTITUTION
E
AUG 11 1936
NATIONAL MUSEUM

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post free 4/-.

The title of this book has been taken from "A Smuggler's Song" by Rudyard Kipling. Its setting is in the early days of the nineteenth century and faithfully depicts the characteristics of the Dales folk of that period, their wit, their capacity for driving a hard bargain, their love of the moors and sea, and their passionate devotion to smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Love and tragedy are intermingled, the whole being relieved by many humorous incidents, some of which take place at the market town which can be recognised as Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,
5 Farringdon Avenue, London, E.C.4.

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net,

post free **1/2.**

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.

LONDON: A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE E.C.4.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

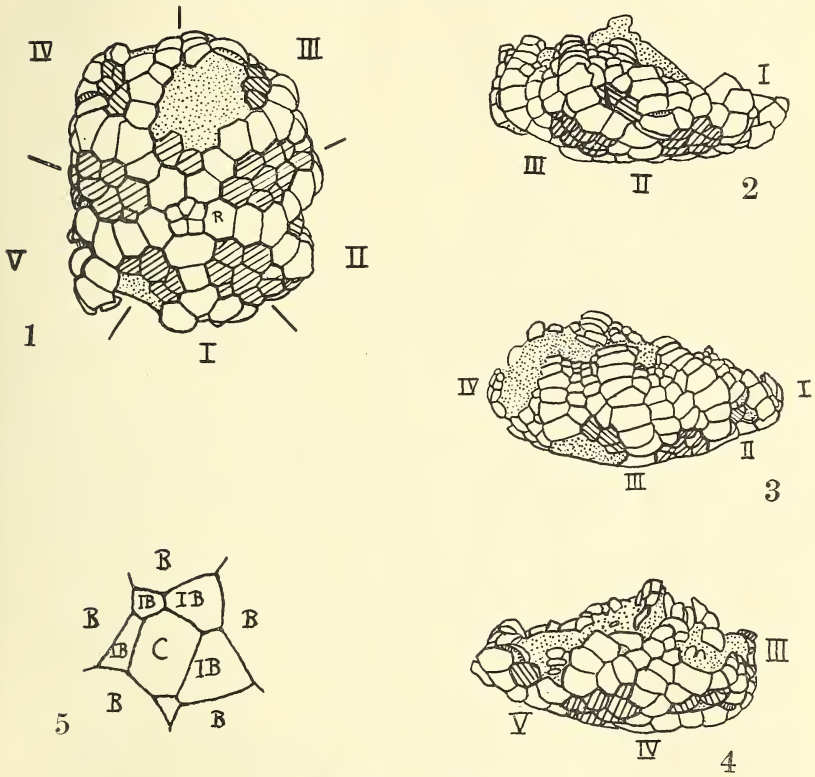
A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

ON A CUP OF UINTACRINUS FROM THE ENGLISH CHALK

A. G. BRIGHTON, M.A.

Text figures 1-6

THE specimen here described is an almost complete dorsal



Text-figures 1-5

Figs. 1-4 natural size: matrix stippled: interbrachials shaded from right to left downwards: interdistichals, from left to right downwards. Fig. 1, from below: sutures between centrale and basals omitted. Figs. 2-4, side views. Fig. 5, centrale (C), and infrabasals (1B), and basals (B) x 20.

cup of the crinoid *Uintacrinus*. Although isolated plates of *Uintacrinus* are common in the English Chalk, the only figure of associated calyx plates *in situ* appears to be that given, with the legend ' F. A. Bather dir.,' in Rowe (1900 *Proc. Geol. Assoc.* xvi, p. 298). It thus seems desirable to place the specimen on record.

LOCALITY AND HORIZON.—The specimen is labelled ' Clayton, Sussex.' All recorded undoubted specimens of

AUG 13 1936

our common[1] species of *Uintacrinus* from the English Chalk occur in the lower half of the *Marsupites*-Zone—the *Uintacrinus* Band or Subzone ; of which indeed the finding of isolated plates of *Uintacrinus* is usually taken as sufficient evidence. ' Clayton, Sussex ' is situated in a wind-gap in the South Downs, six miles north of Brighton. According to Osborne White (1924 : Geol. Country near Brighton and Worthing, *Mem. Geol. Surv.*, p. 35) ' the chalk now quarried at Clayton Limeworks is that of the *Subglobosus*-Zone ' ; while ' Clayton [Railway Tunnel] traverses most of the Lower Chalk.' The nearest outcrops of the *Marsupites*-Zone are two belts which ' lie close together on either side of a line running westward from Ashcombe House, by Falmer and The Menagerie near Stanmer ' (*op. cit.* p. 50). These outcrops are ' inferred (from the presence of higher beds) . . .' and ' no clear exposures were found along . . .' them (*op. cit.* p. 53). It would seem therefore that the record ' Clayton, Sussex ' is not precise ; and that the specimen came from the South Downs somewhere probably South-west of Clayton and between it and Brighton.

The specimen is preserved in the Sedgwick Museum, Cambridge, registered No. B 856.

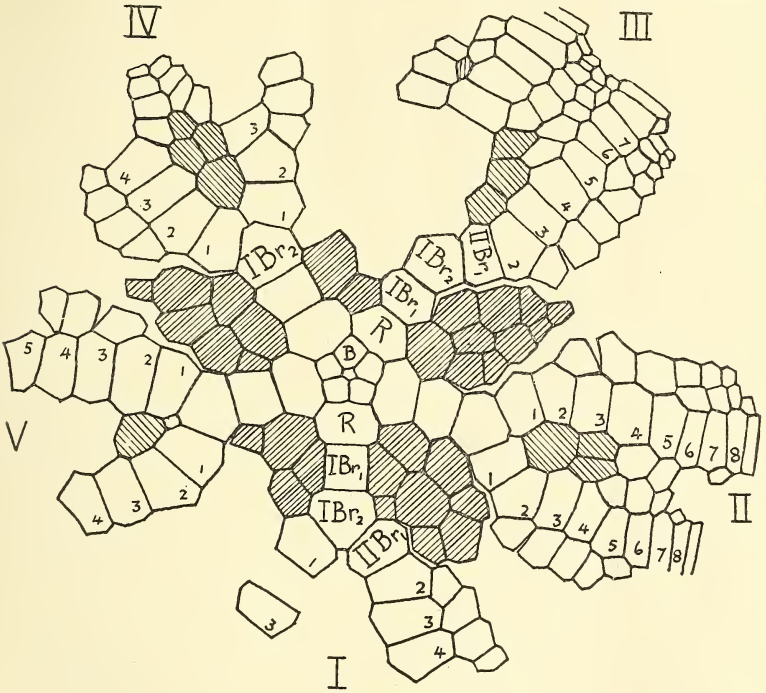
Previous Descriptions of *Uintacrinus* calyces. Two species of *Uintacrinus* have been erected. The most comprehensive accounts of the North American form, *U. socialis* Grinnell, are those given by Bather (1896 : *Proc. Zool. Soc. London* for 1895, pp. 974-1004, pls. liv-lvi) and Springer (1901 : *Mem. Mus. Comp. Zool. Harvard*, xxv, No. 1). The Westphalian form is *U. westphalicus* Schlueter (1878 : *Zeitschr. Deutsch. Geol. Ges.* xxx, pp. 55-63, pl. iv, figs. 1-5). Withers has recorded isolated plates of the genus in the Gingin Chalk of Australia, and has summarised the known occurrences throughout the world (1924 : *Journ. Roy. Soc. Western Australia*, xi, No. 2, pp. 15-18). The accounts of *U. socialis* published by Bather and Springer deal comprehensively with the arrangement and numbers of the calyx plates ; the variation in the number of the interbrachials, interdistichals, and infrabasals is well illustrated by Springer.

Description of Specimen (Text figures 1-6).—Text figures 1-4 show the specimen (fig. 1 from below, figs. 2-4 from the side), natural size ; since, however, most of the plates are slightly disarranged, a diagrammatic analysis of the

[1] A second and apparently rarer species identified by Bather as *Uintacrinus* sp. nov., is recorded by Brydone (1932 *Trans. Norfolk and Norwich Nat. Soc*, XIII, for 1930-31, part II, p. 118) in Sussex and Kent immediately above the *Marsupites*-Zone. He also records it from East Anglia, but see Brydone, 1932 *Journ. Ipswich and District Nat. Hist. Soc.*, I, pp. 158-161.

cup is given in text figure 6. For convenience, the rays in these diagrams have been numbered arbitrarily I-V. The arrangement and number of the plates can be seen in the text figures, in which the terminology and shading is that adopted by Bather (*op. cit.*).

(*a*) Apical System (Text figures 5-6).—*Centrale* (C)



Text-figure 6

Diagrammatic analysis of dorsal cup. Interbrachials shaded from right to left downwards; interdistichals, from left to right downwards; interpinnular, vertically. B, Basals; R, Radials; IBr_1 and IBr_2, first and second Primibrachs; $IIBr_1$, first fixed Secundibrachs; 2-8, second to eighth Secundibrachs. Sutures between Centrale and Infrabasals omitted.

hexagonal, asymetrically placed. *Infrabasals* (I B) five, irregular. *Basals* (B) five. *Radials* (R) five in number, two 7-sided, two 8-sided, one 9-sided.

(*b*) Brachial Elements.—*Primibrachs* : I Br_1-three 6-sided, one 5-sided, one 4-sided : I Br_2-two 6-sided, two 7-sided, one 8-sided. *Fixed secundibrachs* (II Br) : owing to the crushing of the cup, it is not possible to ascertain the exact points where the secundibrachs become free ; but the number of fixed secundibrachs appears to be about eight. What is seen of the pinnulation agrees with Bather's

law (1896, *op. cit.* p. 980)-II Br_2 outer, II Br_4 inner, II Br_5 outer, II Br_7 inner, II Br_8 outer.

(*c*) Supplemental Plates.—*Interbrachials* : 7, 8 and 10 in number in the three areas in which they are preserved. *Interdistichals* : 3, ? 3, and 4 in number in the three areas in which they are complete. *Interpinnulars* : represented by a single plate, in only one area.

Discussion.—Comparison with the figures and descriptions of Bather and Springer show that the arrangement and shape of the plates in English specimens falls within the limits of variation shown by *U. socialis*. Two points possibly call for comment. Firstly, Springer does not mention nor figure a case exactly similar to the English specimen in the arrangement of the centrale and infrabasals, although his specimen XXXVIa (1901, *op. cit.* pl. II, fig. 8) is very close. The centrale in this figure is slightly larger and touches three infrabasals, and not one (as in the English specimen). The difference is not likely to prove constant, and could scarcely be regarded as of specific value, in a genus which shows so much variation in the relation between the centrale and infrabasals. Secondly, the distal angle of I Br_2 (in all five cases) is truncated by a short side in our English specimen [1]; usually in *U. socialis* this side is replaced by a corner, but Springer's specimen No. 25 (1901, *op. cit.* pl. V, fig. 6) shows two similarly shaped plates.

Conclusion.—The English form is undoubtedly *Uintacrinus*, and there is nothing in the shape and arrangement of the plates to distinguish it from *U. socialis* Grinnell.

NEWS FROM THE MAGAZINES

The Entomologist's Record for June contains 'Cumberland Chrysopidæ,' by T. F. Marriner (nine species out of a British total of thirteen) ; 'Ozoir-la-Ferrière : Puy de Dome Mountain : and Le Mont Dore, France in June-August, 1935,' by the (late) Rev. E. B. Ashby ; 'Scientific Notes and Observations. Note on three genonyms,' by T. B. Fletcher ; several 'Notes on Collecting, etc.,' including 'Cornish Notes, 1935,' by C. Nicholson ; 'Current Notes and Short Notices' ; and supplements 'British Noctuæ,' by H. J. Turner ; and 'Butterflies of the Upper Rhone Valley,' by R. Verity.

The Entomologist for July contains 'Notes on British Odonata in 1934 and 1935,' by J. Cowley (with record of a Ceratopogonid on the wing of *Coenagrion pulchellum*) ; 'Migration Records, 1936,' by Capt. T. Dannreuther (*Vanessa atalanta* at Flamborough Head in May, also *Macroglossa stellatarum* on May 19th at Bogbean flowers) ; 'British Lepidoptera Collecting, 1935,' by C. G. M. de Worms ; 'A new species of African Lasiocampidæ, belonging to the genus Pachypasa Walker, 1855 (Lepidoptera),' by W. H. T. Tams ; 'Notes on Braconidæ : XV—Microgasterinæ,' by C. Morley ; 'New Dryopidæ from the Japan Empire (Coleoptera),' by H. E. Hinton ; and several notes and observations.

[1] The English specimen figured by Bather (in Rowe 1900 *op. cit.*) has a distal corner, as in the American specimens.

ECOLOGY AT HAWES, WHITSUNTIDE, 1936

A. MALINS SMITH, M.A.

THE excursions of the Hawes meeting of the Yorkshire Naturalists' Union presented a bewildering variety of ecological problems. The streams of the district cut their way through Yoredale limestones, shales and grits and, probably due to the smaller proportion of limestone, certain plants familiar to students of vegetation in districts on the great Scar limestone, *e.g.* Wharfedale, were almost or entirely absent. Thus Salad Burnet (one record only from limestone of Dodd Fell), Bloody Cranesbill, Shining Cranesbill (one record from Hardraw Scar), Stone Bramble (one record from Wether Fell), Melica nutans, Bird's Eye Primrose, Rockrose, Horseshoe Vetch, Marjoram were either absent or nearly so, and their absence provided a strong contrast to their abundance in Scar limestone areas. Tree seedlings were common. This is everywhere a year for Ash seedlings and they were abundant at Hawes. Ash seedlings were found on Dodd Fell a considerable distance above the tree limit and Hawthorn seedlings were found in a similar position on Widdale Fell. Other seedlings found were Mountain Ash (abundant), Bird Cherry (frequent), Beech, Sycamore, Birch, and Willow. Common trees whose seedlings I did not see nor have brought to my notice were Oak and Elm. The latter is one of the abundant trees of the gill woods and closer search would no doubt reveal its seedlings.

To turn to more local ecological problems, the River Ure above Appersett provided an example of the effect of slope upon vegetation. On the upper flat terrace was a ground vegetation of the Bluebell-Holcus type with much Earthnut and Anemone. Here also were Tormentil, Sorrel Dock and Tuberous Pea. As would be expected from the vegetation, the soil was acid, the P_H being 5·5. No doubt this flat surface had become acid through leaching. It was followed riverwards by a steep slope dominated by Bluebell, but wetter than the level above, for it showed Male and Buckler Fern, Meadowsweet and *Deschampsia caespitosa*. Then came a lower flat terrace with much Bugle and then the last slope to the river bed where were Sanicle, Globeflower, Garlic, Wood Forget-me-not, Early Purple Orchid, and Wood Bellflower. This slope, as would be gathered from its vegetation was much less acid, the P_H under Sanicle being 6·7, under Globeflower (sandy) 6·8-7·0 (more clayey) 6·6. The great Woodrush also grew here and its records are mentioned below. Here the flat surfaces were more acid owing to leaching, the slopes, and especially the lower one, more basic. By the river, too, were some interesting examples of

the undermining of tussocks dominated by *Luzula maxima*. When the water in the river is higher it washes round these tussocks and removes the soil, the edges then fall and are washed away and finally the *Luzula* association is destroyed and its place is taken by an open association of Butterbur with much unoccupied ground. The soil of these tussocks was similar to the river edge soil in general in reaction, its P_H being 7·0.

The *Luzula* association is one of those whose exact status is not yet clear. De Silva (*J. Ecol.* 22) states that it usually grows on soils free from calcium carbonate and with an acid reaction of P_H 4 to 5. It was found in the Hawes district by the River Ure, by Widdale Beck, and in Widdale Car Pine plantation. Tests of the acidity gave for these three localities P_H 7·0 and 6·5, P_H 6·2 and P_H 5·0 respectively. Thus it has here a much wider range of soil reaction than de Silva records. Its situations in the Hawes district agreed only in all having a soil with a high moisture content.

The most interesting locality examined was by Widdale Beck. Here a steep slope above the beck with a general north-west aspect was wooded for the most part, but in the short space of about half a mile showed many changes of ground flora, having (1) a Dog's Mercury association ; (2) Garlic ; (3) *Luzula maxima* ; (4) an association with Meadow-sweet dominant ; (5) a grass-moss association of Sheep's Fescue and *Hypnum schreberi*.

It was an interesting task to disentangle the factors which, with slope, aspect and soil remaining in general similar, produced such variation of ground floras within such a short distance. The task was only in part accomplished. The slope consisted of Yoredale shale below Hardraw limestone, and as the beck was followed downwards the proportion of shale increased because the Hardraw limestone kept the same level above, while the bed of the beck was, of course, getting lower. Thus an increasing depth of shale intervened between the limestone above and the beck below and this had an important effect on the soil, since the shale itself was not basic and acidity increased as it took a greater part in the formation of the soil. Soil tests at the uppermost end of this stretch gave 7·0 to 7·2, at the lower end 6·3. Further at the upper end no shale was exposed, as detached blocks of limestone from above had fallen in sufficient quantity to cover the whole slope. Lower down the shale was exposed in greater and greater amount. The chief variable in the edaphic conditions was the amount of water in the soil. In soils of the same reaction Dog's Mercury and Garlic were respectively dominant clearly according to the amount of moisture, the former on drier, the latter on wetter soils.

Further, among a most luxuriant and almost pure growth of Garlic, the soil was found to be much more clayey than among Dog's Mercury. This accords with wider observations made near Aysgarth, and near Shipley, and with the observation of Mukerji (*J. Ecol.* 24, 1936), that Dog's Mercury roots are very sensitive to poor aeration and cannot withstand water-logging for any length of time. The exact factor which caused in one area an association dominated by Meadowsweet, with Raspberry, Water Avens, Earthnut, Woodsorrel and abundant *Eurhyncium striatum* to replace both Dog's Mercury and Garlic were not obvious, for the soil reaction remained similar, 6·8-7·0, and the water content appeared to be about the same. The replacement of all these by an association of grass, chiefly *Festuca ovina*, and moss, chiefly *Hypnum schreberi*, was undoubtedly due to drier soil conditions. Trees were fewer and the slope was more exposed. The drier and somewhat more acid soil showed a vegetation almost treeless on the steep slope itself, with Rose as the chief shrub, and on the ground Sheep's Fescue, *H. schreberi*, Cocksfoot, Heath Bedstraw, Tormentil, Knapweed,* Tuberous Pea, Wood Cranesbill, and *Viola Riviniana*.

It has been shown therefore that the major part of the striking variations of ground flora were due to variations of soil moisture.

It may be further noted that in parts the slope was quite bare of vegetation owing to recent movement of the loose shale. Above one of these bare slopes limestone blocks had recently been detached and had fallen into the river below. The soil movement here was evidently recent. Near by such a soil was being recolonised, the pioneers being Sheep's Fescue in scattered tufts and occasional plants of *Hieracium murorum*, with the mosses *Hypnum molluscum*, *H. schreberi*, *H. triquetrum*, *H. cuspidatum*, and *Bryum pallens*. This soil was wet with water draining from the limestone and gave a basic reaction of 7·3. Near this again, the recolonisation had gone on far enough to produce a shrub layer of Rose, Birch, Hazel, and Willow, and a closed ground association with *Luzula maxima* dominant, abundant *Hypnum triquetrum*, Strawberry, Coltsfoot, Primrose, Marsh Valerian, Water Avens, and Wood Violet. Here, although the soil was wet, apparently with drainage from the limestone, the soil reaction was much more acid, being P_H 6·0-6·2.

Little has been said about the trees, because much planting had taken place and the ground floras were more interesting as being little altered by man. In general, the stream-side woods were of the Ash-Elm type, with a high proportion of Elm. Alder and Willow occurred near the water, while

Oak, Birch, Sycamore, and Beech occupied the flats above the steep slope: The shrubs of the Ash-Elm wood were Bird-cherry, Hazel, and Mountain Ash.

One place on the Widdale Beck slope showed an example of the Mercurialis-Adoxa society with the Moschatel attacked by the black rust *Puccinia adoxæ*.

RECORD

COLEOCHAETE ORBICULARIS PRINGSH.

On January 8th, 1936, at Doncaster, Mrs. Morehouse showed me some green discs about $\frac{1}{4}$ inch in diameter or rather under, which were attached to the bottom of a fruit bowl which was holding water in which water-snails had been living. These green discs turned out on microscopic examination to be *Coleochaete orbicularis* Pringsh. This alga was recorded in the alga-flora of Yorkshire (1901) for two stations, Frizinghall Dam, near Bradford, 1895, and Pilmoor. There have been no other occurrences recorded until the present one. This need not mean that the alga is rare, as systematic search for these epiphytic algæ is seldom undertaken. The special interest of this occurrence is that the alga was in the unusual position of being unattached to any other plant. The disc-like plants had made an attachment to the bottom of the fruit bowl, so that there was appreciable resistance to their removal. They are normally found on the leaves of water-plants, such as Elodea. Mrs. Morehouse gathered some Water Milfoil in the River Aire at Beale, near Knottingley, V.C.64, on May 25th, 1935. Her object was to observe the egg-masses of *Limnaea peregra* attached to the Milfoil, which were of an unusual shape. The plant was put in water and kept indoors, the water being renewed on evaporation. The vivid emerald green discs of the *Coleochaete* were first noticed early in November, 1935. Their environment must have been suitable as some of them attained a diameter of 4 m.m., which is the maximum recorded for the species. There was no sexual reproduction in the plants examined, but asexual zoosporangia were plentiful, many of which had discharged their zoospores. Though normally on submerged water plants, this species is occasionally found on other submerged objects as recorded by Heering in Pascher's *Susswasserflora*.—A. Malins Smith.

CORRECTION

HYPNUM HAMULOSUM B. & S.

Through an unfortunate oversight the proof of the note on this species (*The Naturalist*, July) was not corrected and the name was wrongly spelt, *i.e. lamulosum* instead of *hamulosum*. Other errors were Harton for Horton, *Brentelia* for *Breutelia*, *osonundoides* for *osmundoides* and *Lornum* for *hornum*.

JUNIPER IN SWALEDALE

A. MALINS SMITH, M.A.

On June 2nd, 1936, after the Hawes meeting of the Yorkshire Naturalists' Union, I visited Upper Swaledale and discovered some interesting facts about the juniper there. I was lucky enough to meet with a farmer who had been over fifty years in the district and conversation with him revealed a state of affairs with regard to Swaledale juniper which was of the greatest interest to me in view of the investigations made by our Ecological Committee into the Moughton juniper. For, broadly speaking, the Swaledale juniper shows the same general degeneration which we have found on Moughton and which I also called attention to in the Teesdale juniper in *The Naturalist* of July, 1925. The farmer informed me that the juniper area was steadily growing smaller. He pointed out a fell pasture on the slopes above East Gill which used to have much juniper and now had not a bush. The juniper I had just visited on his own farm was less than one-third the extent that he could remember it to be, and the same was true of another piece on his farm. The only considerable amount of juniper left in the neighbourhood now is on a very steep, rather bare slope near Thwaite. The area of juniper I examined was under an acre in extent and showed a typical replacement of juniper by bilberry. The area of good juniper had the shape of a rather flat U and between the arms of the U was a region of dying juniper with flourishing bilberry and poor grass. The good juniper had an undergrowth of bluebell, wood-sorrel and better grass. The base of the U faced down the slope and evidently the juniper was dying from the upper centre in a downward and radial direction. As on Moughton, there were no seedlings nor young plants. This was not due to absence of berries, for I found several female bushes with a good crop of 1935 berries and with plenty of female cones of the present year. The following observations shed light on some of the possible causes of deterioration which have been suggested by the Moughton survey.

(1) I saw no Gymnosporangium and, though the attacks of this fungus have never appeared dangerous, the fact is worth recording. (2) The black leaf-spot fungus was not in evidence, though the characteristic dead and yellow shoots scattered here and there over the bushes, which some associate with the leaf-spot fungus on Moughton, were present. I examined some of these as carefully as I could in a short stay, but saw no black-spot fungus on them. (3) With regard to rabbits I saw no special signs of their presence, nor from the form and growth of the bushes did I conclude that there was any

heavy rabbit pressure upon them. (4) The farmer stated that in his opinion neither sheep nor goats touched juniper and that in over fifty years of experience of grassland dale farming he had never seen a sheep touch juniper. This is a similar opinion to that which was obtained from Teesdale farmers. It does not preclude, as was pointed out by J. N. Frankland in a letter to *The Naturalist*, September, 1926, the destruction of seedling juniper by sheep, and if seedlings are destroyed the ultimate destruction of the juniper scrub is certain. It would seem, however, that in an area of scrub where the dominant juniper plants are disliked by sheep, some seedlings would be certain to escape destruction by the protection afforded by the older plants. The evidence we are accumulating on Moughton, with which the impression left by my short visit to the Swaledale juniper agrees, tends to show that juniper seeds do not germinate at all when the ground is covered by a closed association, be it of bilberry, ling or grass. On Moughton all the few seedlings found have been in the open association on the limestone. It is striking in this connection to note that the most extensive and flourishing area of juniper in Upper Swaledale is on a steep slope, elevation 1,000-1,300 feet approximately, with a very considerable proportion of bare rock. The juniper I examined was on Yoredale shales below Yoredale limestone. There is an old limekiln about 150 feet above the juniper field. The soil under the good juniper was acid giving a P_H of approximately 5·2.

THE BRITISH NEUROPTERA[1]

J. M. BROWN, B.Sc., F.L.S., F.R.E.S.

THE Ray Society and Mr. F. J. Killington are to be complimented on the publication of the first part of *A Monograph of the British Neuroptera* (1936),a worthy addition to the series of beautiful monographs issued by the Ray Society. Students of the British Neuroptera have worked for some years under the disadvantage of having no up-to-date account of the order. McLachlan's Monograph, for so long the standard work, was published as long ago as 1868, and Mr. Killington's Synopsis, a very helpful work, appeared in 1929. On these, and on occasional papers mainly by C. L. Withycombe, K. J. Morton, and F. J. Killington, workers have had to depend. The new volume promises to supply all the information students of the order are likely to require for some time to come. Entomologists in general will find the present part of especial interest and value, in that only one-third of the book is devoted to systematics, and two-thirds are

[1] *A Monograph of the British Neuroptera*, Vol. I, by F. J. Killington, published by The Ray Society, 25/-.

occupied with more general questions relating to the Neuroptera, such as external morphology, life-histories and biology. Chapter I includes a brief but adequate account of the structure of the imago, the family Hemerobiidae being selected for detailed treatment, while the remaining families are dealt with more briefly. Wing-venation and genital armature rightly receive close attention. Then follow chapters dealing fully with the egg, larva, and pupa, and problems associated with these, such as oviposition, hatching, ecdysis and metamorphosis. Chapter 5 is concerned with bionomics, and such points as habitats, hibernation, food, pairing, protective devices and parasites are discussed in great detail. Tables are given showing the chief prey of each species, the months during which the imagines may be found, and the parasites known to attack them.

The systematic account of the British species begins with Chapter 6 (page 183). The list given on pp. 10-12 includes fifty-three British species, of which fifteen are described in this volume, the remainder being reserved for the second part. Here we note a number of changes in nomenclature, some familiar names have unfortunately had to disappear, and give place to less familiar ones.

We note *Osmylus fulvicephalus* (Scop.) for *O. chrysops* Scop. ; *Eumicromus angulatus* (Steph.) for *Micromus aphidivorus* Schr. ; *Hemerobius simulans* Walk. for *H. orotypus* Wall. ; *Boriomyia betulina* (Strm.) for *B. nervosa* Fabr. ; *Sympherobius fuscescens* (Wall.) for *S. inconspicuus* McL. ; *Chrysopa ciliata* Wesm. for *C. alba* L. ; *C. carnea* Steph. for *C. vulgaris* Schn. ; *C. albolineata* Kill. for *C. tenella* Schn. ; and *Nathanica* Navás for *Nothochrysa* McL. The present volume deals systematically with the families Coniopterygidæ, Osmylidæ, Sisyridæ and three genera (Psectra, Micromus and Eumicromus) of the Hemerobiidæ. Keys for their determination, description of the imago, habitats, early stages, food, life-history and distribution are given for each species. We note that of the fifteen species here described, seven have so far been recorded for Yorkshire, and four only for Derbyshire, a state of affairs that should be remedied.

The book is excellently illustrated by means of sixty-eight delightfully clear text figures giving structural details, fifteen plates, including illustrations of eggs, larvæ, etc., and four plates of coloured drawings by Mr. Killington, of wing-patterns, very well reproduced.

The volume is, of course, excellently printed and bound, and should stimulate more entomologists to take an interest in these beautiful insects. We look forward to seeing the second part of the work appear at an early date.

1936 August 1

YORKSHIRE NATURALISTS AT HAWES

This meeting was planned for the investigation of the neglected fells to the south of Hawes ; here we have a very large area of varied country at above 1,800 ft. O.D., much of it being on limestones, the Main limestone of the Yoredales. The late Dr. Arnold Lees wrote a chapter for a book by Bogg on the district, and in this he cited some exceedingly interesting and unexpected plants, but apparently the information never got into more scientific literature and our effort was intended to try and prove the presence of this flora, unfortunately the weather was distinctly unkind and on the Saturday morning we had snow on the hill tops and heavy rain below, this delayed the start for Dodd Fell and left little time on our arrival there. From the short time spent on this summit it was evident that the sought-for flora was at least a possibility, but a much longer search and at a later date in the year was really necessary before coming to any definite conclusion. Our Whitsuntide meetings are the best attended and this was no exception, though the weather at this and at the last meeting in Wensleydale when we were at Askrigg proved very depressing.

Mr. J. P. Utley writes : Saturday, 30th May : During the journey up Sleddale numerous Willow Wrens were observed in the copses around Aysgill Force. Above the Force a Tree Pipit's nest was found and two pairs of Yellow Wagtails were feeding by the beck side. One pair of Dippers, one pair of Sandpipers and one pair of Redshank were observed.

On ascending Little Ings Ghyll three pairs of Partridge were flushed and in the allotments Curlews were fairly numerous and a few Snipe were put up.

Throughout the day Meadow Pipits were in evidence but not numerous. The summit of Dodd Fell was not productive of much bird life beyond a few Grouse, but on the south-west corner among the rocks surrounding a nest of potholes a pair of Ring Ousels were observed and a nest containing five eggs was found. On the same slope a Golden Plover sitting hard on her four eggs was put up.

On arrival at the north-east spurn of Dodd Fell a search was made among the tarns and water holes for nests of the Black-Headed Gull. In all, nine nests were found, three containing three eggs each. Two pairs of Redshanks evidently had nests in the vicinity, but these were not found. Only one pair of Dunlin was observed, and not one member of the Duck family was seen.

During the day's ramble only one Wheatear (male) was seen and only one Cuckoo heard.

Sunday, 31st May : On this day I followed the general party up the Yore from Appersett to near the junction of Cotter Beck. On the Yore banks nests of the Wren, Dipper and Sandpiper were found.

Mr. W. F. Fearnley and self then decided to explore the tarns on Widdale Fell with a view to ascertaining the numbers of Black-Headed Gulls nesting there.

We journeyed along the summit of the Fell and there counted six pairs of Golden Plover, two pairs of Ring Ousel, considerable numbers of Curlew and Lapwing, four Snipe, several pairs of Grouse (one with day-old young). No Redshank were seen on the high ground, but two pairs were observed on the lower slopes, also several Partridge. No Wheatears were seen by us during the day, but one bird was seen by other members in Mossdale.

Regarding the nests of Black-Headed Gulls, seven empty nests were found in the tarns, all of which bore evidence of having been disturbed. On the return journey, at about the centre of the long high summit of the Fell we became interested by the screaming of three pair of Gulls, and consequently made an examination of the open moorland nearby,

and discovered eight nests, one with eggs. The condition of the moor was dry and the nests were quite three-quarters of a mile from any water.

Again there was no sign of any Duck. One Kestrel was seen, and on the slopes of the Fell both Meadow and Tree Pipits were observed.

Regarding Wheatears the present season is remarkable in the very few pairs to be found anywhere in Upper Wensleydale. Redstart are also extremely scarce, and I have not yet heard of anyone who can record a Corncrake. No Grey Wagtail was recorded on these two days.

It may be interesting to note that while a number of rabbits were seen on Dodd Fell, they were entirely absent from Widdale Fell.

Mr. A. Wood recorded twenty-two species of birds without seeing a single House Sparrow, he finds House Martins scarce this year but Sand Martins more plentiful than usual though he did not see any on the Hawes excursion.

Freshwater Biology (J. M. Brown): It was not possible under the conditions of the meeting to spend a great deal of time working out the animal life of the various becks passed on the way, and only a very superficial idea of the fauna could be gained. In all cases the water in the becks was low as a result of the recent dry period, but the rain of Tuesday night and Wednesday caused a rapid rise in the water-level. A characteristic of the stream beds hereabouts was the occurrence of large areas of almost level slabs of native rock with few loose boulders, affording poor lodgment for animal life. Where the bed was less stable and shingle predominated, and the current was less rapid, animal life was more plentiful. Vegetation in the bed was generally scanty, being represented mainly by the diatom-slime coating the stones, but in a few places growths of moss on submerged rocks proved richer in animal forms. More time was spent in Aysgill and Mossdale than elsewhere, and my remarks apply more particularly to the streams there.

Perhaps the most striking feature noticed was the great scarcity of " flies " about the streams. Emergence had evidently been delayed by the long spell of cold weather. Stoneflies were in moderate numbers only. Those taken belonged to seven species: *Perla cephalotes* Curt., *Isoperla* (*Chloroperla*) *grammatica* Poda., *Chloroperla* (*Isopteryx*) *tripunctata* Scop., *C. torrentium* Pict., *Leuctra inermis* Kmpy., *Amphinemura cinerea* Oliv., *Nemura cambrica* Steph.

Very few imagines and sub-imagines of Mayflies were seen, and only four species were represented, viz. *Ecdyonurus venosus* Fabr., *Heptagenia lateralis* Curt., *Baetis rhodani* Pict., *B. pumilus* Burm.

Only a single adult Caddis-fly was taken during the week-end, viz. *Ecclisopteryx guttulata* Pict.

In all the becks worked, nymphs of Stoneflies and Mayflies were quite abundant. About and under stones were *Perla cephalotes* and *P. carlukiana*, *Isoperla grammatica*, *Chloroperla* sp., *Leuctra* sp. among the former, and *Ecdyonurus venosus*, *Heptagenia lateralis*, *Rithrogena semicolata*, *Paraleptophlebia submarginata* and *Baetis* sp. among the latter, and among the submerged mosses *Baetis* sp. and *Centroptilum* sp., while in the sediment nymphs of *Amphinemura* (probably *cinerea*) abounded.

Case-forming Caddis were represented by *Halesus* sp., *Stenophylax* sp. and *Silo pallipes*, whose flanged cases were particularly numerous in a small side beck flowing into Duerley Beck, where larvæ and pupæ both occurred. Here also were larvæ of *Beraea maurus* ready for pupating, and pupæ of *Agapetus fuscipes*, some being almost ready for emergence. This last species was not present in anything like the large numbers one sometimes finds. The mud galleries of the larvæ of *Psychomyia pusilla* were extraordinarily numerous on the larger stones in Duerley Beck, where in one place over one hundred were counted in an area of less than one square foot. The web-spinning species, *Rhyacophila* sp.,

Plectrocnemia conspersa, and (especially among the submerged moss) *Hydropsyche* (possibly *instabilis*) were well represented. The beetles *Helmis maugei* and *Latelmis volkmari*, as larvæ and adults, and *Ochthebius exsculptus* occurred plentifully in Duerley Beck.

No larvæ of *Pedicia rivosa* were seen, but *Chironomids*, tubes of the *Rheotanytarsus* type, larvæ of *Dixa* and *Simulium* occurred, while from submerged moss in Aysgill several pupæ of *Melanochila riparia* were taken.

The Freshwater Limpet (*Ancylus*) occurred in the upper part of Duerley Beck, but so far as my observations went, was not frequent in the larger becks worked. Gammarus (the Freshwater Shrimp) did not appear as plentiful or as usual as one expects, but the Crayfish (*Astacus pallipes*) was abundant in the River Ure towards Mossdale, and through the diligence of Master Malins Smith, was discovered in Widdale Beck.

Diptera were scarce but on the Fell summits where Cottongrass was present *Tipula alpium* Bergr. was usually seen, and on other types of vegetation *T. subnodicornis* Zett. The only other *Tipula* species seen during the week-end were *T. varipennis* Mg. and *T. lateralis* Mg. In a pool on Wether Fell *Phalacrocera replicata* L. was present and near the Limestone area *Dactylolabis frauenfeldtii* Egg. On any odd flower blooms on the hills *Empis verralli* Coll. occurred and among other diptera were *Ormosia nodulosus* Mcq., *Chilosia albitarsis* Mg., *Sericomyia lappona* L., *Rhamphomyia nigripes* F., *R. sulcata* Fln., *Empis opaca* F., *E. trigramma* Mg., *Hilara maura* F., *Bibio nigriventris* Hal.

Flowering Plants (W. A. Sledge) : Chief interest centred round the attempt to verify the existence of those rare plants enumerated in the circular as recorded by Lees for Dodd Fell and Mossdale, but the results of the excursions were disappointing as not one of the plants was found.

In Sleddale the best ground was the lower part of the dale from Gayle to Aysgill Force. *Ribes alpinum*, long recorded for the Gill-wood below the Force, is still abundant there and in the same wood *Stellaria nemorum*, *Cardamine amara*, *Crepis paludosa* and *Myosotis sylvatica* were plentiful. *Trollius*, *Geranium sylvaticum*, *Saxifraga granulata*, *Pinguicula vulgaris*, *Salix phylicifolia* and *Selaginella* were noted in the neighbouring pastures or by the stream side above and below the Force, and *Peucedanum Ostruthium* was seen by a farm building above Gayle. On Dodd Fell summit and on Wether Fell *Rubus Chamaemorus* was very plentiful, while on the south-western slope of the Fell at fully 1,800 feet, *Saxifraga granulata* was seen in plenty. Its occurrence at this altitude is noteworthy, as Mr. A. Wilson in his *Altitudinal Range of British Plants* gives 1,500 feet as its uppermost recorded limit. Other species noted on Dodd Fell were *Draba incana*, *Sedum villosum* and *Saxifraga hypnoides*.

Most of the species seen in the lower part of Sleddale were also noted in the course of Sunday's excursion up the river to Mossdale and in the lower part of Widdale. In Mossdale itself, Oak fern was seen, and *Polygonum viviparum* was reported by Mr. Cheetham from high up Widdale Fell. No sign of *Trientalis* could be found in Widdale Carr plantation and there can be little doubt that the plant no longer exists there. In Widdale Gill *Ribes pubescens* was seen and here as also along the river from Hawes to Mossdale, *Salix phylicifolia* was abundant, but no *S. nigricans* was seen.

The majority of the plants listed in the circular as of general occurrence in the district were seen during the week-end. Those for which I have no note are the *Hieracia*, *Rumex aquaticus*, *Salix nigricans*, *Habenaria albida* and *Polypodium calcareum*. *Erinus alpinus* was observed in flower in the quarry on the Hawes-Oughtershaw road, and Miss Rob found *Vicia sylvatica* and *Saxifraga aizoides* in Whitfell Gill, Askrigg.

Dr. T. H. B. Bedford sends the following list of mosses seen by himself and Miss Malins, a feature of the mosses is the abundance of *Leucodon sciuroides* on the walls, this is plentiful in Upper Wensleydale, but quite uncommon in the dales to the south. *Swartzia inclinata* was seen to be plentiful on the Cam road where this gets into the North Riding on Doddfell and on the limestone near by, especially in one or two of the small potholes, *Pseudoleskea catenulata* was fairly plentiful, and on the summit peat masses was found, *Dicranodontium longirostre* var. *alpinum*.

Mosses collected in the neighbourhood of Hawes :

Tetraphis pellucida Hedw.
Catharinea undulata Web. & Mohr.
Polytrichum aloides Hedw.
P. alpinum L.
P. commune L.
P. strictum.
Ditrichum flexicaule Hampe.
Swartzia montana Lindb.
S. inclinata Ehrh.
Seligeria pusilla B. & S.
Ceratodon purpureus Brid.
Dichodontium pellucidum Schp.
D. pellucidum var. *compactum* Schp.
Dicranella heteromalla Schp.
D. squarrosa Schp.
Dicranoweisia cirrata Lindb.
Campylopus flexuosus Brid.
C. fragilis B. & S.
Dicranodontium longirostre var. *alpinum* Milde.
Dicranum Bonjeani De Not.
D. scoparium Hedw.
D. majus Turn.
Fissidens bryoides Hedw.
F. adiantoides Hedw.
F. taxifolius Hedw.
Grimmia apocarpa Ehrh.
Rhacomitrium heterostichum Brid.
R. fasciculare Brid.
R. lanuginosum Brid.
R. canescens Brid.
Tortula subulata Hedw.
T. muralis Hedw.
Barbula rubella Lindb.
B. tophacea Mitt.
B. fallax Hedw.
B. recurvifolia Schp.
B. revoluta Brid.
B. convoluta Hedw.
Weisia rupestris C.M.
W. verticillata Brid.
Trichostomum tortuosum Dision.
Encalypta streptocarpa Hedw.
Zygodon Mougeotti B. & S.
Orthotrichum rupestre Schleich.
O. anomalum var. *saxatile*.
Splachnum sphaericum Linn. fil.
Funaria calcaria Wahl.
Aulacomnium palustre Schwaeg.
Bartramia ithyphylla Brid.
Philonotis fontana Brid.
Breutelia arcuata Schp.
Webera nutans Hedw.
W. albicans Schp.
Plagiobryum Zierii Lindb.
Bryum filiforme Dicks.
B. pallens Sw.
B. pseudo-triquetrum Schwaeg.
Mnium affine Bland.
M. rostratum Schrad.
M. undulatum L.
M. hornum L.
M. orthorrhynchum B. & S.
M. stellare Reich.
M. punctatum L.
Fontinalis antipyretica L.
Neckera crispa Hedw.
Homalia trichomanoides B. & S.
Pterygophyllum lucens Brid.
Leucodon sciuroides Schwaeg.
Porotrichum alopecurum Mitt.
Anomodon viticulosus Hook & Tayl.
Pseudoleskea catenulata B. & S.
Thuidium tamariscinum B. & S.
T. Philiberti Limpr.
Climacium dendroides Web. & Mohr.
Orthothecium intricatum B. & S.
O. intricatum var. *abbreviatum* Dixon.
Camptothecium sericeum Kindb.
Brachythecium rutabulum B. & S.
B. rivulare B. & S.
B. velutinum B. & S.
B. populeum B. & S.
B. purum Dixon.
Eurhynchium praelongum Hobk.
E. Teesdalei Schp.
E. striatum B. & S.
E. rusciforme Milde.
Plagiothecium elegans Sull.
P. denticulatum B. & S.
P. silvaticum B. & S.
P. undulatum B. & S.
Amblystegium filicinum De Not.
Hypnum fluitans L.
H. uncinatum Hedw.
H. revolvens Swartz.
H. commutatum Hedw.
H. cupressiforme L.

Hypnum Patientiae Lindb.
H. molluscum Hedw.
H. palustre Huds.
H. cuspidatum L.
H. Schreberi Willd.
Hylocomnim splendens B. & S.
Hylocomnim loreum B. & S.
H. squarrosum B. & S.
H. squarrosum var. *calvescens* Hobkirk.
H. triquetrum B. & S.

Lichens : Mr. W. E. L. Wattam writes : Gayle Village and along the green lane to the river crossing for the Kettlewell Road.

It is the walls which form the most attractive part of this area, giving a delightful feast of colouration. These walls are for the greater part built from the varied silicious rocks of the Yoredale series, and in certain sections are solely of the fossiliferous Yoredale Limestone. Here are a host of cosmopolitan species, as well as direct pointers of those species whose habitant is solely of a calcareous or silicious nature. The species noted are :

Collema pulposum Ach.
Pannaria rubiginosa Del. in Dub.
Candelaria concolor Wain.
Parmelia physodes Ach. and var. *tubulosa* Mudd.
P. Mougeotii Schaer.
P. saxatilis Ach.
P. conspersa Ach.
P. fuliginosa Nyl.
Cetraria glauca Ach.
Evernia furfuracea Mann. and *f. scobicina* Cromb and *f. ceratea* Cromb.
Xanthoria parietina Th. Fr. and vars. *aureola* Th. Fr. and *ectanea* Oliv. and *f. congranulata*.
Placodium callopismum Mer.
Pl. flavescens A. L. Sm.
Pl. murorum DC.
Pl. citrinum Hepp.
Pl. ferrugineum Hepp and var. *festivum* A. L. Sm.
Pl. rupestre B. & R. and var. *calvum* A. L. Sm.
Candelariella vitellina Müll-Arg.
Physcia hispida Tuckerm.
Ph. caesia Nyl.
Lecanora cartilaginea Ach.
L. muralis Schaer.
L. campestris B. de L.
Lecanora atra Ach.
L. sordida Th. Fr.
L. galactina Ach. and sub-sp. *dissipata* Nyl.
L. conizæa.
L. symmictera Nyl.
L. effusa Ach. (gate palings).
L. sulphurea Ach.
L. epanora Ach.
L. polytropa Schaer. and *f. efflorescens* Cromb.
L. parella Ach.
L. cinerea Sommerf.
L. calcarea Sommerf.
Acarospora fuscata Th. Fr.
Pertusaria pertusa D.T. and S.
P. dealbata Cromb.
Diplochistes scruposus Norm.
Gyrophora torrefacta Cromb.
Cladonia pyxidata Hoffm. (on earth)
C. fimbriata Fr. (on earth).
Lecidia coarctata Nyl.
L. confluens Ach.
L. contigua Fr.
L. rivulosa Ach.
Rhizocarpon geographicum DC. and var. *atrovirens* Koerb.
Verrucaria nigrescens Pers.
V. rupestris Schrad.
V. calciseda DC.

Corticolous species within this area are few owing to the paucity of trees, the dominants of which are Ash and Sycamore, with occasional Mountain Ash, Mountain Elm, Goat Willow, Birch, Beech and Lime. These yielded the following species : *Parmelia phydsodes* Ach., *P. saxatilis* Ach. and *f. furferacea* Schaer., *P. sulcata* Tayl., *P. fuliginosa* var. *laetivirens* Nyl., *Cetraria glauca* Ach. and var. *fallax* Ach., *Evernia prunastri* Ach. and *f. retusa* Cromb., *Ev. furfuracea* Mann. and *f. scobicina* Cromb., *Ramalina fraxinea* Ach., *Lecanora subfusca* Ach., *L. pallida* Schaer., *L. conizæa* Nyl., *Physcia ciliaris* D.C., *P. pulverulenta* Nyl., *Pertusaria faginea* Leight., *P. pertusa* D.T. & S., and *P. Wulfenii* DC.

Little Ing Gill (North-east face of Dodd Fell). The approach to Dodd Fell was made by way of this valley. The downward course of the stream has cut a moderately wide channel to the basement, silicious rock and these slabs with the more stabilised boulders make satisfactory habitat for *Leptogium sinuatum* var. *scotinum Koerb* (among mosses), *Evernia furfuracea* Mann., *Peltigera canina* Willd., *P. polydactyla* Hoffm. (both among mosses), *Parmelia physodes* Ach., *P. saxatliis* Ach., *Physcia hispida* Tuckerm., *Lecanora muralis* Schaer., *L. polytropa* Schaer. and *f. efflorescens* Cromb., *L. parella* Ach., *L. cinera* Sommerf., *Lecidia coarctata* Nyl., *L. contigua* Far. and var. *platycarpa* Fr. and *flavicunda* Nyl., *L. lithophila* Ach.

Dodd Fell. The immense area covered by this mountain, whose height attains 2,189 feet, is for the greater part so densely covered with gramineous vegetation that the lichen flora is practically limited to the summit part of the slopes in a south-easterly direction. On emerging from Little Ing Gill an area of Bilberry with numerous huge gritstone slabs provided several interesting upland species. The summit is practically a pure Cotton Grass (*Eriophorum vaginatum*) bogland intersected with mounds having a compacted growth of Bilberry, Black Crowberry, Cloudberry, Ling and some little of Cranberry. This is succeeded by long, high dry ridges of pure peat capped with the beforementioned plants and in consequence the lichen flora is much more prominent and satisfactory. Working forward to the old track leading to Ingleton the basement rock is disclosed and silicious loving lichens are noticeable. The wall by the path on the Snaizholme side of the hill being of similar character to that mentioned in the first part of my report is also beautified by the species there mentioned. The list given below relates only to the mountain, the species noted in the traversed area being :

Solorina saccata Ach.
Parmelia physodes Ach. and var. *tubulosa* Mudd.
P. mougeotii Schaer.
P. saxatilis Ach.
P. lævigata Ach.
P. omphalodes Ach. and var. *pannidformis* Ach.
P. fuliginosa Nyl.
Cetraria glauca Ach.
C. islandica Ach.
C. aculeata Fr. and *f. hispida* Cromb.
Evernia furfuracea Mann. and var. *ceratea* Cromb.
Lecanora muralis Schaer.
L. tartarea Ach.
L. parella Ach.
L. cinera Sommerf.
Gyrophora torrefacta Cromb.
G. polyphylla Hook.
Stereocaulon condensatum Hoffm.
S. coralloides Hoff.
S. denudatum Floerke.
Cladina sylvatica Hoffm.
Cladina uncialis Web. and forms *bolacina* Nyl., and *elatior* Fr.
C. papillaria Hoffm.
Cladonia pyxidata Hoffm., and vars. *pocillum* Fr. and *chlorophæa* Floerke.
C. fimbriata Fr., and sub-sp. *fibula* Nyl.
C. degenerans Spreng.
C. cervicornis Schaer.
C. gracilis Willd.
C. furcata Schrad.
C. squamosa Hoffm.
C. deformis Hoffm.
C. coccifera Willd.
C. bellidiflora Schaer.
C. bacillaris Nyl.
C. Floerkeana Fr. and var. *carcata* Wainio.
Lecidia granulosa Schaer. and var. *escharoides* Schaer.
L. uliginosa Ach.
L. contigua Fr.
L. rivulosa Ach.
Rhizocarpon geographicum DC.

Wether Fell. The best portion of this Fell (2,150 feet) is the undisturbed peat ridges immediately on the ascent from the green lane. Here is a typical lichen flora of the upland moors, in many respects similar to that noted on Dodd Fell. Beyond this area the flat tableland is too unstable for lichen growth, being absolutely controlled by

loose Cotton Grass peat channelled in all directions, but when elevation is again attained lichens become a prominent part of the flora. The surround of the elevated parts of the Fell is a dense gramineous growth. *Placodium ferrugineum* Hepp. and its var. *festivum* A. L. Sm., *Lecanora atra* Ach., and *Verrucaria rupestris* Schrad, are prominent species on the Limestone walls bordering the approach road. The species noted on the Fell are :

Solorina saccata Ach.
Parmelia physodes Ach., and its var. *tubulosa* Mudd.
P. saxatilis Ach.
P. lævigata Ach.
P. omphalodes Ach. and its var. *panniformis* Ach.
P. fuliginosa Nyl.
Cetraria glauca Ach.
C. islandica Ach.
C. aculeata Fr. and *f. hispida* Cromb.
Evernia furfuracea Mann and var. *ceratea* Cromb.
Gyrophora torrefacta Cromb.
G. polyphylla Hook.
Stereocaulon coralloides Hoff.
Cladina sylvatica Hoffm.
C. uncialis Web. and *f. bolacina* Nyl.
C. papillaria Hoffm.
Cladonia pyxidata Hoffm.
C. fimbriata Fr.
C. degenerans Spreng.
C. cervicornis Schaer.
C. gracilis Willd.
C. coccifera Willd.
C. Floerkeana Fr. and var. *carcata* Wainio.
Lecidia granulosa Schaer.
L. contigua Fr.
L. vivulosa Ach.
Rhizocarpon geographicum DC.

Coleoptera : Mr. M. D. Barnes writes : From the coleopterist's point of view both the weather and the type of country visited were against the collecting of large numbers of species, as the accompanying list will show. The weather on most days was far too cold for the sweeping net to be of real use, as most of the insects kept well under cover. The most fruitful method of collecting, particularly on the Fell tops, was by turning over stones. By this method several interesting ground beetles were turned up, although *Carabus glabratus* Pk., which it was hoped would be found on the highest ground, was not in evidence. This particularly fine carabid, which occurs only on mountains above 2,000 feet, is recorded from Ingleborough and probably occurs on many other hills in the north of Yorkshire. On the high ground in sheltered hollows the two very handsome Click Beetles, *Corymbites pectinicornis* L. and *C. cupreus* F. were flying in numbers. One specimen of *C. cupreus* taken on Whether Fell was particularly interesting, in that the yellow of the elytra was reduced to two small blotches. Near Appersett a dead hedgehog appeared to be the centre of attraction for large numbers of Burying Beetles (*Necrophorus humator* F. and *N. mortuorum* F.) together with the large and rather fearsome looking Rove Beetle *Creophilus maxillosus*.

List of Coleoptera :

Leistus rufescens (F.).
Nebria gyllenhali (Sch.).
N. brevicollis (F.).
Loricera pilicornis (F.).
Bradycellus verbasci (Duft.).
Lyperosomus cristatus (Duft.).
Trechus obtusus (Er.).
Anchomenus pallipes (F.).
Creophilus maxillosus (L.).
Cantharis pellucida (F.).
Rhagonycha lignosa (Mull.).
Corymbites serraticornis (L.).
C. cupeus (F.).
Hydrotharra aucta (L.).
Liosoma ovatulum (Clair).
Aphodius lapponum (Gyll).
Necrophorus humator (F.).
N. mortuorum (F.).

Conchology : Mrs. E. M. Morehouse writes : The country around Hawes was not so productive for mollusca as one might have expected. This might be due to the very cold winds prevailing during the week-end

from May 29th to June 2nd. In Hardraw Glyll were found the largest number of species in a small area, in other districts they were much more scattered.

Arionater var. *aterriona* Taylor was observed on Drop Fell and Whether Fell at approximately between 1,700 and 1,800 feet high. In Duerley Bottom Pastures the writer took *Arion subfuscus* var. *blunnea* Lehmann about 1,320 feet up.

Freshwater species were conspicuous by their absence, only *Ancylus fluviatilis* Müller was seen at the Ford, Duerley Bottom and *Limnaea truncatula* Müller, also was taken in the same locality under stones in the dried up watercourse. I should like to thank the members of the Y.N.U. for specimens brought in by them and for their observations.

The following numbering of places after species will no doubt facilitate printing.

1. Hawes.
2. Gayle.
3. Duerley Bottom.
4. Pastures.
5. Hardraw Ghyll.
6. Drop Fell.
7. Whether Fell.

Arion ater Linné, 6.
A. ater var. *aterrima* Taylor, 5, 6, 7.
A. ater var. *brunnea* Roebuck, 5.
A. subfuscus Drap, 1.
A. subfuscus var. *brunnea* Lehmann, 4.
Agriolimax agrestis Linné, 1.
Limax maximus Linné, 1.
Arianta arbustorum Linné, 5.
Hygromia rufescens Pennant, 1, 5.
H. granulata Alder, 1, 5.
Pyramidula rotundata Müller, 1, 2, 5.
P. rupestris, 2.
Vitrea cellaria Müller, 5.
V. alliaria Miller, 1, 5.
V. pura Alder, 5.
V. nitidula Drap, 1.
Ancylus fluviatilis Müller, 3.
Limnaia truncatula Müller, 3.

Fungi (W. G. Bramley and John Grainger) :

Uromyces valerianæ Fckl. Mossdale.
U. flectens Lagerh. On *Trifolium repens*, Wether Fell, 1,700 ft. O.D.
U. alchemillæ Lév. Teleutospores. Dry railway embankment near Appersett ; dry, shrubby heath near Aysgarth ; steep, dry bank, Sleddale.
U. ficariæ Lév.
U. poæ Rabenh. Aecidia on Celandine, damp soil in wood above New Bridge, Appersett, Sleddale.
Puccinia obtegens Tul. On *Carduus arvensis*, dry railway embankment, Hawes.
P. leontodonis Jack. On *L. hispidus*, Appersett.
P. major Diehl. Mossdale, R. Ure.
P. adoxæ Hedw. Widdale Beck, Whitfield Gill. The host was abundant in the potholes on Widdale Fell, but the fungus was not found thereon.
P. valantiæ Pers. On *Galium saxatile*, Wether Fell, 1,700 ft. O.D.
P. betonicæ D.C. Teleutospores on *Stachys betonicæ*. Abundant on river flats above New Bridge, Appersett, soil P_H 6·7, but absent from the drier pastures adjoining and in which the host plant was abundant.

P. tumida Grev. On earthnut ; damp soil under trees, bank of R. Ure, Appersett, soil P_H 5·5. Could not be found on drier open pastures adjoining, with same sandy soil and same P_H, though the host was abundant.
P. violæ D.C. On *Viola riviniana*, Wether Fell, 1,800 ft. O.D. One infected plant only was found, though the host was abundant. Shrubby heath, Aysgarth.
P. fusca Winter. Teleutospores on *Anemone nemorosa*. Moist soil in wood, but much more abundant on drier pastures above New Bridge, Appersett.
P. conopodii-bistortæ Kleb. On *Polygonum bistorta*. One infected leaf only was found at Appersett, though the host was extremely abundant.
P. obscura Schröt. On *Luzula sylvatica*, Weddale, Wether Fell.
P. oblongata Winter. On *Luzula campestris*, Hawes.
P. caricis Rabenh. Aecidia on *Urtica dioica*. Wether Fell, 1,500 ft. O.D., and Mossdale. Host was very widely distributed, but only two infected plants were found.
P. winteriana Magn. On *Allium ursinum*. One infected leaf only on plant growing in sandy soil on bank of R. Ure, Appersett. *Phalaris*, the alternative host, was found two miles away.
P. poarum Niels. On *Tussilago farfara*, Appersett.
Triphragmium ulmariæ Winter. Mossdale, Widdale.
Phragmidium fragariastri Schröt. Hawes and Mossdale.
Urocystis anemones Schroet. On *A. nemorosa*.

Cystopus candidus Lév. On *Arabis hirsuta*.
Peronospora schleideni Unger. On *Allium ursinum*.
Entomophthora coleopterorum Petch.

Ovularia bistortæ (Fckl.) Sacc. On *Polygonum bistorta*.
O. obliqua Ouden. On. *Rumex* sp.
Botrytis cinerea Pers.
Phyllosticta caricola var. *minor* Brunard. On *Carex* sp.

Bovista nigrescens Pers. Wether Fell, Mossdale.
Omphalia umbellifera (Linn.) Fr. On *Campylopus flexuosus*, Wether Fell, 1,700 ft. O.D.
Collybia velutipes (Curt.) Fr.
Pleurotus acerosus Fr.
Entoloma cericeum (Bull.) Fr.
Stropharia semiglobata (Batsch.) Fr.
Polyporus squamosus (Huds.) Fr.
P. betulinus (Bull.) Fr.
Polystictus versicolor (Linn.) Fr.
Stereum hirsutum (Willd.) Fr.
Dacryomyces deliquescens (Bull.) Duby.

Xylaria hypoxylon (Linn.) Grev.
Melanomma pulvis-pyrius (Pers.) Fckl.
Sphaeria acuta.

Trochilia ilicis Cronan.
Rhytisma acerinum Fr. Ascophores on dead leaves of Sycamore.
Mollisia cinerea (Karst.) Cronan.
Lachnea scutellata Gillet.
Dasyscypha virginea Fck.
D. nivea Mass.
D. calycina Fckl.

Trichia varia Pers. A stalked form with long elators.
T. affinis De Bary.
T. decipiens Macbr.

Thanks are due to Mr. T. Petch, B.A., B.Sc., of King's Lynn, and to the authorities of the Natural History Museum, South Kensington, for the examination of specimens.

YORKSHIRE NATURALISTS AT ABERFORD
MAY 20th, 1936.

Once again the weather interfered with the attendance, heavy thunderstorms during the morning kept away many who had intended being present, and the wet vegetation made insect collecting difficult. This meeting was made the official excursion of the Entomological Section, and a report on this branch of the Union's work will appear later. At the meeting the President of the Union, Mr. E. G. Bayford, took the Chair, and a vote of thanks for the permission to visit his estate was accorded to Col. Gascoigne.

Ornithological Notes (J. P. Utley) : Although a heavy thunder shower immediately preceded the start on the route and made the going very wet and dirty, it did not deter the birds from singing. Throughout the journey Thrushes, Blackbirds, Yellow Hammers, Willow Wrens, Skylarks, Tree Pipits, and Chaffinches were in evidence, while an occasional Whitethroat could be heard. Two Sand Martins were seen skimming above Cock Beck, and a Snipe was heard in the marshes alongside. Lesser Redpole kept flitting across the bottom of the valley, and an occasional Garden Warbler might be seen. On the journey between Aberford and Parlington Park the most noteworthy record was of two Grasshopper Warblers, most clearly and distinctly heard. In the willows by the Cock Beck and not far from the road near the Park a Sedge Warbler was observed.

On the route through Parlington Woods not much bird life was actually seen. Wood Pigeons were most numerous and a few Turtle Dove were observed. The Blue Tit, Tree Creeper, and Wood Wren were also seen. I was in the company of Mr. Braithwaite, a keeper acting as guide, most of this stage of the journey. He told me with regret that the Little Owl was much too common, and had no good word to say for the alien. No Green Woodpeckers are in the woods, but both Great and Lesser Spotted Woodpeckers may be found : Woodcock also breed there and a few pairs of Nuthatch. One Kingfisher was seen on the edge of the wood near the Cock Beck, and Mr. Braithwaite said there were about three pairs.

On Hook Moor, apart from a number of birds already mentioned, one pair of Hawfinch was seen and one Corn Bunting. Of birds of prey but one Kestrel was recorded throughout the day. Few Pied Wagtails were seen and none of the Yellow species.

Regarding mammals, Mr. Braithwaite said Badgers had been observed in Parlington Wood.

Flowering Plants (W. A. Sledge) : Hook Moor yielded the two most interesting species seen on this excursion. Last year's dead spikes of *Orobanche reticulata* var. *procera* were conspicuous over a considerable area and many young plants were found. The old record for *O. major* mentioned in the circular doubtless refers to this plant. Here it is parasitic on *Cnicus arvensis* whereas in the Etchell Cray locality, where it is now extinct, it grew on *C. eriophorus*. In another part of the Moor *Astragalus danicus* was seen in good flower. Ecologically, Hook Moor provides marked contrasts between calcicole and calcifuge associations, areas dominated by heather and bracken alternating with grassy areas containing *Viola hirta, Astragalus danicus, Gentiana Amarella, Bryonia dioica,* etc.

A single clump of *Helleborus viridis* was seen in a field bordering the Cock Beck below Aberford, having doubtless spread there from Becca Banks where it is plentiful. Lower down the stream towards the Barwick road *Carex acutiformis* was noted and *Carduus crispus* and *Conium maculatum* were seen near the entry to Parlington Park. In the Park itself *Stellaria graminea, Viburnum opulus, Cornus sanguinea, Lithospermum officinale,* and *Listera ovata* were seen, but the flora yielded no

species which are not of general occurrence throughout the surrounding country.

Bryology (F. E. Milson) : A survey was made of two quarries in the district, both on the Permian rock. One was on the Hook Moor cross roads in the angle formed by the Doncaster and Pontefract roads, the other near Towton. In both of these the bryophytic flora was of the ' dry ' type, hepatics being very few in number and confined to the moister spots, sheltered by undergrowth, on the walls of the quarries. The Hook Moor quarry is one of the very limited number of localities in Yorkshire for *Thuidium abietinum*.

In addition, a visit was paid to Garforth, where *Tortula cernua* was seen to be flourishing in its known habitat, and to Wothersome Lake, near Bramham, where *Physcomitrella patens* and *Riccia crystallina* had previously been gathered in quantity. These latter were not seen, however, owing to the absence of dried mud by the lake side.

A full list is given of all species noted :—

Mosses.

Ceratodon purpureus Brid.
Fissidens pusillus Wils.
F. decipiens De Not.
Tortula cernua Lindb.
T. muralis Hedw.
T. subulata Hedw.
Barbula rubella Lindb.
B. convoluta Hedw.
B. unguiculata Hedw.
Trichostomum mutabile Bruch.
Orthotrichum diaphanum Schrad.
Funaria hygrometrica Sibth.
Webera albicans Schp.
Bryum intermedium Brid.
B. cæspiticium L.
B. capillare L.
Mnium hornum L.
M. punctatum L.
Thuidium abietinum B. & S.
T. Philiberti Limpr.
Brachythecium rutabulum B. & S.
B. purum Dixon.
Eurynchium prælongum Hobk.
E. Swartzii Hobk.
E. murale Milde.
Amblystegium serpens B. & S.
Hypnum riparium L.
H. chrysophyllum Brid.
H. Schreberi Willd.
Hylocomium splendens B. & S.
H. squarrosum B. & S.

Hepatics.

Preissia quadrata (Scop.) Nees
Aneura pinguis (L.) Dum.
Aplozia riparia (Tayl.) Dum.
Lophozia turbinata (Raddi) Steph.

Mycology (W. E. Bramley) : A few species were handed to me at the meeting, and a short walk afterwards down the Cock Beck towards Hayton Wood yielded a few more, chiefly Uridenes. Two species of *Peziza* had no spores and were not in a condition to be identified. I am indebted to the authorities at the Natural History Museum for help in the identification of some of the specimens.

Hygrophorus chlorophanus Fr.
Marasmius dryophillus (Bull.) Karst.
Pleurotus corticatus Fr.
Naurcoria semi-orbicularis (Bull.) Fr.
Inocybe Godeyi Gillet.
Spharia acuta.
Puccinia obtegens Tul.
P. bromina Enks. On *Bromus* sp.
P. lolii Niels.
P. leontodontis Jacky.
Plasmopara pusilla Schröet. On *Geranium pratense*.
Lycogola epidendrum Fz.

Conchology (Mrs. Morehouse) : The climitic conditions were ideal for Parlington Park, but the ' catch ' was very disappointing. I have worked the other side of Aberford with good results, but on this excursion several of the smaller helices which should have been forthcoming were conspicuous by their absence, also species taken in the small coppice on the Aberford-Barwick road and along the wayside to Bramham Cross Roads.

There were quite a number of *Helix nemoralis* L. and *Hygromia rufescens* Pennant, seen by the footpath by the road from Aberford to Hook Moor. The *H. nemoralis* var. *cuvieria* Moq. showed the white

banding immediately below the black. J. W. Taylor once said he regarded this form as the original banding of these special molluscs.
Helix nemoralis var. *quinquefasciata* Moq. 12345. Roadside, Aberford.
H. nemoralis var. *nilssonia* Moq. (123)45. Roadside, Aberford.
H. nemoralis var. *cuvieria* Moq. 00300. Roadside, Aberford.
H. nemoralis var. *carnea* V. (12)345. Roadside, Aberford.
Hygromia rufescens Pennant. Roadside, Aberford.
Vitrea cellaria Müller. Parlington Park.
V. alliaria Miller. Parlington Park.
V. nitidula Drap. Parlington Park.
Clausilia bidentata Ström. Parlington Park.
Pyramidula rotundata Müller. Parlington Park.
Agriolimax agrestis Linne. Quarry, Hook Moor, and roadside, Aberford.
Arion ater Linné. Roadside, Aberford.
A. ater var. *aterrima* Taylor. Roadside, Aberford.
Limax maximus Linné. Quarry, Hook Moor.

Entomology (W. D. Hincks, M.P.S., F.R.E.S.): The Annual Field Meeting of the Entomological and Plant Galls Sections of the Yorkshire Naturalists' Union was held on Saturday, June 20th, at Aberford in conjunction with the excursion of the Union.

The morning was marred by the inclement weather conditions, so that it was not possible to collect at all extensively until Parlington Park was reached, and indeed it was only after lunch when the party investigated Hook Moor that the entomologists were able to settle down to careful investigation and collecting.

As far as it has been possible to determine, the results of the collecting done are distinctly interesting. It must be remembered, however, that it is impossible to identify quickly a large assortment of different orders of insects, so that material of the more obscure groups such as *Ichneumonidae*, *Braconidae*, etc., is of necessity omitted from the following list of captures.

Mr. E. G. Bayford records the following Coleoptera from Hook Moor:

Tachyporus chrysomelinus L.
Brachypterus glaber Steph.
Cartodere ruficollis Marsh.
Mycetophagus quadripustulatus L.
Thea 22-punctata L.
Scymnus auritus Thunb.
Athons haemorrhoidalis F.
Athons vittatus F.
Rhinosimus ruficollis L.
Anaspis maculata Fourc.
Phaedon tumidulum Germ.
Cassida vibex L.
Apion hydrolapathi Kirb.
Centhorrhynchidius troglodytes F.

The following Coleoptera were observed by the writer. The abbreviations are A=Aberford, P=Parlington Park, and H=Hook Moor.

Demetrias atricapillus L. H. by sweeping.
Coccidula rufa Hb. H.
Cerylon histeroides F. P.
Dacue bipustulata Tb., P., common. H.
Silvanus unidentatus F. P.
Aphodins rufipes L. A. (taken by Mr. Wood).
Corymbites incanus Gy. H.
Denticollis linearis L. P., H.
Ptilinus pectinicornis L. P.
Clytus arietis L. A single example seen by Mr. M. Barnes.
Stenochorus meridianns Pz. H., a number of examples were taken on the wing.
Grammoptera ruficornis F. H., A.
Longitarsus melanocephalus D.G. P.
Derocrepis rufipes L. A.
Chaetocuema concinna Mm. A.
Orchesia undulata Kr. P., a single example, which unfortunately eluded capture, in fungus on dead tree.
Pyrochroa serraticornis Sp. A.
Rhynchites germanicus Hb. A.
Liosoma deflexum Pz. H.
Orchestes fagi L. H.
Tychius picirostris F. H.
Cronus scrophulariae L. A.
C. alanda Hb. A.
Rhinoncus castor F. A.
Eccoptogaster scolytus F. P.

Mr. C. A. Cheetham reports the following Diptera :

Tipula cava Ried.
Pachyrhina quadrifaria Mg.
Hydrophoria conica W.
Lucilia sericata Mg.
Empis tessellata F.
Balioptera tripunctata Fln.

The writer adds the following Diptera and other orders.

Clinotanypus nervosus (Mg.). H.
Symphoromyia crassicornis Pz.
Dioctria atricapilla Mg. H.
D. rufipes Deg. H.
Dolichopus migulatus P.
Chilosia maculata Fhr. A.
C. albitarsis Mg.
Chrysogaster solstitialis Fln. Taken by Mr. Wood.
Volucella bombylans L.
Ptilonota guttata Mg. H.
Platystoma seminationis F. Taken by Mr. Wood.

Ephemeroptera.

Ephemeradanica Müll. *Baetis binoculatus* L. *B. rhodani* Pict.

Hymenoptera.

Chrysis ignita L. Common on dead silver birch on Hook Moor.
Cephnopygmaens L. Common on *Ranunculus* flowers at Aberford.
Allantus arcuatus Forst.
Allantus marginellus F.
Tentoredo maculata Gf. Taken by Mr. Wood.
Arge ustulata L. H., taken by Mr. Wood.

Dictionary of British Wayside Trees, by **A. W. Holbrook,** pp. 236, 46 plates and 102 figures, 7/6 (Country Life, Ltd.) This is a very useful compilation of the characteristics of all the trees commonly found in Great Britain, including conifers. The illustrations are of two sorts, plates showing the habit and branching (usually taken in winter) and line drawings of the leaves, twigs and fruits. These are effective, though at times somewhat rough. For each is given a description of such details as size, arrangement of buds and other salient characteristics, and for introduced trees the approximate time of appearance in this country. The book may be recommended to naturalists in general. It would be especially useful for schools and for non-technical readers who desire to recognise the common trees.

Biology in the World To-day, by **L. Anderson Fenn,** pp. 104, 2/6 (Methuen and Co., Ltd.) In view of the manner in which biology is tending to impinge upon social life to-day, it is not without interest to have an exposition such as is given in this little book of the general relation between biological discovery and human affairs. The author deals first with current ideas as to how a biological mechanism works, including the mechanism of heredity, and then proceeds to discuss the relations between the theory of inheritance and modern ideas on evolution, social practice and human personality. There is much of interest in this book, and it indicates much of the philosophy of the modern biologist. The general reader and the student will both derive profit from it.

Wild Flowers of the Wayside and Woodland, by **T. H. Scott and W. J. Stokoe,** pp. 352, 708 illustrations, including 320 in colour, 7/6 net. (Warne and Co., Ltd.) To those who remember the work of Edward Step, this book will be welcome, as it is written round the beautiful illustrations in colour which appeared in his ' Wayside and Woodland Blossoms.' The illustrations, which were remarkable for their veracity, have on the whole stood reduction in size well, and they provide a useful basis for a work of this character. The main idea of the book is to provide a simple non-technical guide to the commoner sorts of wild flowers. The method of identification is based on a classification into flower colours, a key of figures being given to facilitate matters. Full details of the characteristic plants are given, and there is more than enough provided to allow for a considerable extension of interest in wild plants. This is definitely a book to be recommended for those whose interest in botany is general and who want a convenient guide to wild plants.

The Naturalist

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

BRITISH BIRDS

AN ILLUSTRATED MONTHLY MAGAZINE

Edited by H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., H.F.A.O.U.;
Assisted by Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., F.Z.S., and N. F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

A complete current History of British Birds

ARTICLES **NOTES**
CORRESPONDENCE **REVIEWS**

Beautifully illustrated with Photographic and other Plates

ANNUAL SUBSCRIPTION, 20/- POST FREE; MONTHLY, 1/9 NET.
Specimen Plates with List of Contents post free.

London: H. F. & G. WITHERBY, 326, High Holborn.

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. EAGLE CLARKE, F.R.S.E., and F. BOYES.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. FORTUNE, F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

LONDON: A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C. 4.
And at HULL.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, **6/-** *post free.* *Single Parts*, **1/3.**

All communications to be addressed to—
W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

THE COUNTY OF THE WHITE ROSE

By A. C. PRICE, M.A., Formerly Scholar of Pembroke College, Oxford. 415 pages, Crown 8vo, with 70 illustrations and a folding map of the Three Ridings. 2/6 net, or post free 2/10.

This is the only book of a reasonable size which deals at all adequately with the History of Yorkshire. It will prove a storehouse of information to all who are interested in castles, abbeys, churches, battlefields, etc., of which Yorkshire is so richly endowed. For rambles, or more extended tours in Yorkshire, the book will prove of great value.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,

5 Farringdon Avenue, London, E.C.4.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.
J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., PH.D.
C. L. WALTON, M.Sc., PH.D.
F. E. WEISS, D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.MET.S.

Communications to :—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.
Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London. August, 1936.

505.42

SEPT., 1936

No. 956
No. 729 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

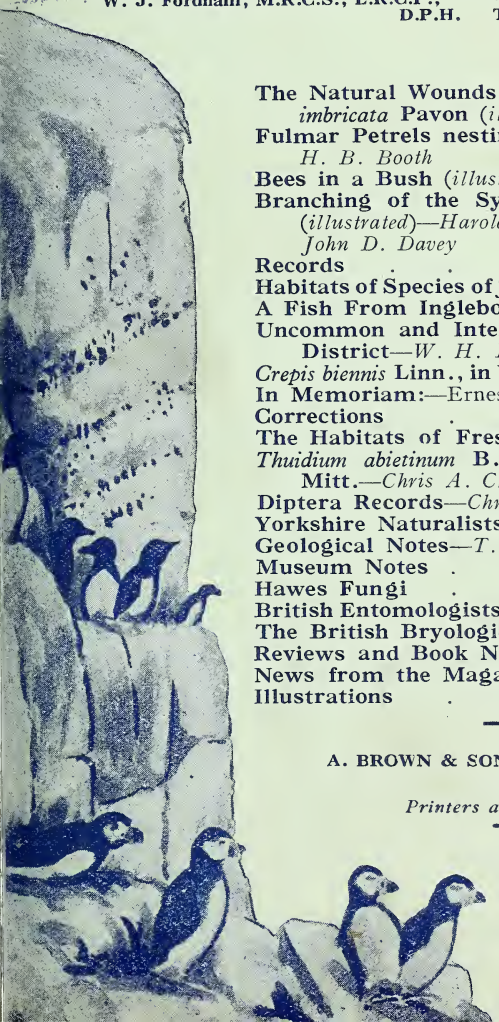
SMITHSONIAN INSTITUTION
SEP 15 1936
NATIONAL MUSEUM

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

	PAGE
The Natural Wounds in the Leaves of *Araucaria imbricata* Pavon (*illustrated*)—*Robert Bloch*	193-199
Fulmar Petrels nesting on the Farne Islands—*H. B. Booth*	199
Bees in a Bush (*illustrated*)—*D. W. Bevan*	200
Branching of the Sycamore *Acer pseudoplatanus* (*illustrated*)—*Harold Barnes, B.Sc., B.A., and John D. Davey*	201-203
Records	203
Habitats of Species of *Juncus*—*W. H. Pearsall, D.Sc.*	204
A Fish From Ingleborough Caves—*H. B. Booth*	204
Uncommon and Interesting Algae in the Lake District—*W. H. Pearsall, D.Sc.*	205-206
Crepis biennis Linn., in Yorkshire—*Robert J. Flintoff*	206
In Memoriam:—Ernest Hallowell—*W. H. B.*	207
Corrections	207, 214
The Habitats of Freshwater Mollusca—*W.H.P.*	208
Thuidium abietinum B. & S. and *T. hystricosum* Mitt.—*Chris A. Cheetham*	208-209
Diptera Records—*Chris A. Cheetham*	209
Yorkshire Naturalists at Hackness	210-211
Geological Notes—*T. Sheppard, M.Sc., F.G.S.*	212-213
Museum Notes	213
Hawes Fungi	213
British Entomologists at Cambridge—*W. D. Hincks*	214
The British Bryological Society	214
Reviews and Book Notes	214-215
News from the Magazines	211, 215-216
Illustrations	195, 197, 200, 202

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

THE COUNTY OF THE WHITE ROSE

By A. C. Price, M.A., Formerly Scholar of Pembroke College, Oxford. 415 pages, Crown 8vo, with 70 illustrations and a folding map of the Three Ridings. 2/6 net, or post free 2/10.

This is the only book of a reasonable size which deals at all adequately with the History of Yorkshire. It will prove a storehouse of information to all who are interested in castles, abbeys, churches, battlefields, etc., of which Yorkshire is so richly endowed. For rambles, or more extended tours in Yorkshire, the book will prove of great value.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,
5 Farringdon Avenue, London, E.C.4.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

THE NATURAL WOUNDS IN THE LEAVES OF *ARAUCARIA IMBRICATA* PAVON.

ROBERT BLOCH

Introduction.

During his stay at the University of Leeds, the author had the opportunity of making a short investigation of young and old leaves of *Araucaria* from trees in different localities in Great Britain and Ireland. Of especial interest were the natural wounds which appear in the persistent leaf cushions and laminæ during radial expansion of the axis. The development of these wounds and the histological changes connected with cork formation were studied, but at the same time some observations were made upon the morphological features of younger and older trees from the different localities.

Seward and Ford[7] (1906) have given a general account of *Araucaria imbricata* and the anatomy of the leaves has been described by Mahlert[6] (1885). Further literature up to 1921 is reviewed in a paper by Feustel[4].

A. General Observations

(*a*) *Habit of trees.*

Araucaria trees exhibit two habits, either a pyramidal form with the lowest branches bending down to the ground and retaining their leaves, or a form with the trunk bare of its branches for three-fifths or more of its length and, under normal conditions, representing the older trees. Cultivated trees, however, vary considerably in general habit and in the size and thickness of the leaves and often they lose their lower whorls of branches comparatively early. In Kew two young trees, about 17 years old, had retained branches of the upper five whorls only, another tree 24 years old of the upper nine whorls. Near Leeds a 20-year-old tree had retained the majority of its branches, whilst a tree about 50 years old had 15 whorls of branches at the top, the other 35 whorls being dead or lost. Living green adventitious shoots are, however, often seen on the lower parts of the trunk, where they arise mainly below branch insertions. The magnificent trees of Castle Kennedy, near Stranraer, which are estimated to be 80-90 years old, have not the typical appearance of old trees, as the lowest branches, themselves about 45 years old, bend down to the ground and their leaves are still green. Under the humid conditions of that locality the trees grow very well, and the author saw seedling plants, also mentioned by Bean[2], which had grown naturally from seeds fallen from the trees. The best material was obtained from these trees, but this was derived mainly from the trunk and lower branches.

SEP 14 1936

(*b*) *Size of leaves.*

In *A. imbricata* only foliage leaves are developed and these vary in size and thickness according to locality and also to some extent even on the same tree. In shape they are shield-shaped or more triangular, sometimes more lanceolate. For some years the leaves continue to grow. From a secondary pendent branch from a Castle Kennedy tree, leaves were taken about 4·5 cms. long, whilst leaves as long as 6·5 to 7·5 cms. had fallen from not very old branches higher on the tree. Differences in length of the leaves on the same branch and between those from branches of the same age are common ; such differences depend to some extent on the external seasonal conditions for growth, which also affect the radial growth of the axis. There is also a marked difference between leaves formed at the beginning and end of the season, both on trunk and branches. The formation of smaller leaves at the beginning of each season's growth makes it easy to count the number of annual growth increments and thus to determine the age of the leaves.

(*c*) *Age of leaves.*

On both trunk and branches the leaves remain alive and probably maintain their normal function for many years, and after death usually remain attached to the stem. The leaves are thus likely to undergo subsequent anatomical and physiological changes during the radial expansion of the shoot. A life of 10 to 15 years is recorded in the literature for *Araucaria* leaves, but recently J. H. Elliott[3] and the author saw leaves which were much older. On material sent from Ireland leaves 25-30 years old were still retained and these were still quite green except for a small part at the apex. On the trunk of the 17-year-old trees at Kew, 11-year-old leaves were still green and alive, whilst living leaves 14 years old were seen on the trunk of a 20-year-old tree in Leeds. The oldest leaves came from the Castle Kennedy trees, where also there seemed to be some difference in the persistence of leaves on different branches of the same tree. On four different lower branches, leaves of the ages of 32, 37, 37 and 40 years were seen and in all these a part of the lamina was still alive and green.

(*d*) *The effect of radial growth of the axis upon form and upon cork formation in the leaves.*

During radial expansion of the stem, the leaf cushions become tangentially extended, the leaf base becomes broader and thicker and the lamina more triangular. This process may induce changes in the inner tissues[3], but most evident

are the cracks, which appear in the superficial layers of epidermis and fibres, first in the cushions, later extending to the lamina. The formation of these cracks is illustrated in Seward and Ford[7] (Figs. 6B and 6C). In the present investigation a further study has been made of the changes which the leaves undergo before they turn brown and die

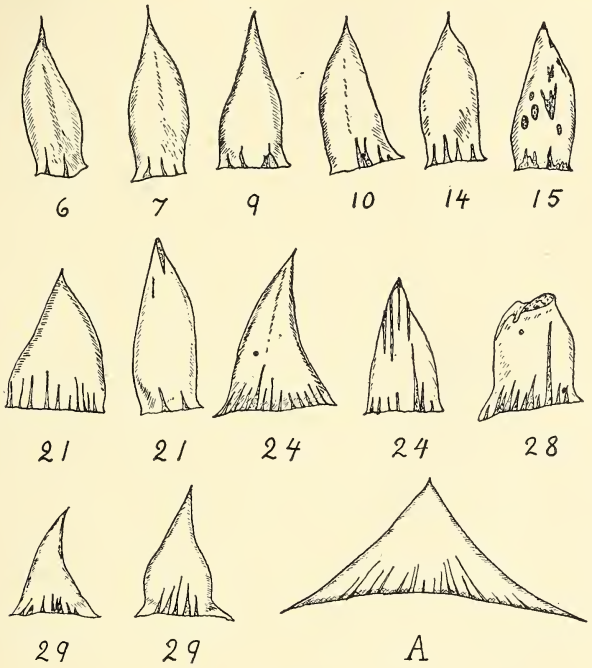


Fig. I

Laminae 6-29 years old, from a 45-year-old pendant branch of a Castle Kennedy tree, showing variations in size and shape and the formation of fissures in the laminae (12/6/1935). The numbers represent the age of the leaves. (×½).
(A) Abnormal leaf below a branch insertion from an Irish tree. (×½).

or fall off. As the leaves remain on the stem for many years the lamina becomes more triangular and continuous fissures are formed from cushion to lamina (Fig. I). The fissures are more conspicuous on the abaxial side and these multiply with age, new ones appearing between the older ones.

Cork formation begins in the cortex of the shoot between the leaf attachments before splitting of the leaf cushions takes place. On an old tree from Castle Kennedy, it began in the 5-year-old part of a strong branch from the base of the tree, whilst the splitting of the leaf cushions was not seen until the 6-year-old part. On the trunk both processes occur

slightly earlier than on the branches, and they are also earlier on the main branches than on the secondary ones. Cork formation is usually stronger on the lower sides of branches than on the upper. The age when cracks appear in the lamina itself is variable, in the 17-year-old trees from Kew splitting was already noted in the 5-year-old leaves, splits were also noted in some 6-year-old leaves at Castle Kennedy, but here the leaves were generally 12-14 years old before splitting appeared. Differences of radial growth in different seasons seem to have an influence, as suggested for example by the fact that in one branch splitting of the laminæ was visible in all 12-year-old leaves, whilst 18-year-old ones were all intact. Similarly, splitting is more conspicuous in the later formed, stronger leaves of each season's growth, both on trunk and branches.

To what extent the shape of the leaves and their subsequent changes depend upon the radial growth of the axis can be seen by the behaviour of leaves attached to the trunk around branch insertions. Here leaves of quite irregular form may occur and the leaves or their decayed remains persist longest after death. On a 30-year-old part of the axis of the Irish tree, the leaves measured 3·5 to 4 cms. in length and 3 to 3·5 cms. in width (at the leaf base). Beneath the point where a branch emerged very broad leaves occurred, one of them which was still alive was 3·5 cms. long, but the leaf base was 7·5 cms. wide. (Fig. IA).

After the first appearance of fissures in the cushions of the 6-year-old leaf, 35 years or more may elapse before the leaf dies. The fissures may reach the apex in very old leaves, becoming wide at the base. Cork blisters may appear on the leaf cushions. These types of splitting are very different from the radial splitting of the old epidermis in such forms as *Acer striatum* (Haberlandt[5]).

As the leaves age, part of the apex and also the margins turn brown and gradually the whole leaf dies, but under normal conditions it then remains for many years attached to the stem, slowly withering away, first the thinner part of the lamina, whilst the base of it may still be seen attached to the raised central portions of the cushions for a number of years.

The cushions and perhaps parts of the leaf bases which have changed their shape during radial expansion of the shoot are stretched and fused with the underlying stem tissues and remain on the leaf scars for a very long time. Even when the leaf scars are enormously extended, the leaf areas no longer recognisable, and when longitudinal fissures are formed in the bark of the old trees, the remains of the epidermis of the leaf cushions, showing the original fissures,

can still be seen below the raised portions of the stems which mark the leaf attachments. After they have withered away, a thin bark with reddish contents covers all parts of the axis, whilst close beneath it lies the green cortex. The protecting layers of cork are thinnest on the raised portions of the old leaf scars, where they may very easily be scratched away.

B. Cork Formation in the Leaf

For the histological part of the investigation mainly fresh material was used, but some was also available fixed in 70 per cent. alcohol, chromacetic acid or Flemming's solution.

The anatomy of the leaf may be briefly reviewed as follows. Beneath an epidermis with thick outer walls, numerous ribs

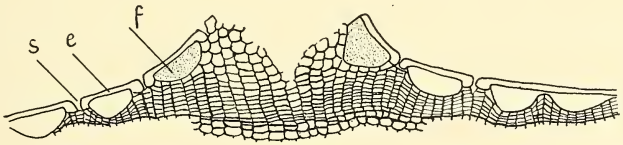


Fig. II

Diagrammatic transverse section of a large fissure in the leaf base, illustrating the undulating cork meristem and the proliferation of cork cells into the cracks. (×35).

(s) stoma; (e) epidermis; (f) fibre bundles whose walls are disintegrating.

of lignified fibres occur. These are separated by almost regular, parallel rows of stomata, the inner respiratory cavities of which are bordered by the cells of the mesophyll and a few thin-walled hypodermal cells beneath the guard cells. The chlorophyll containing mesophyll is usually differentiated into one or two rows of palisade cells towards each leaf surface, with a relatively deep spongy layer between. The vascular bundles occupy the median plane of the leaf and alternate with secretory passages, though these also occur elsewhere in the leaf. In the bundles the number of centripetal tracheids increases with age of the leaf. Some non-lignified sclerenchymatous fibres occur outside the phloem, and idioblasts, which are thick-walled, lignified and encrusted with crystals of calcium oxalate, are scattered in the mesophyll, especially abundantly in the leaf bases and stem cortex.

The leaves of *Araucaria imbricata*, like those of many other plants, both evergreens and mesophytes, readily form wound cork, either in the form of small cork blisters or as layers separating larger pathological portions of the lamina. A characteristic feature of this long persisting leaf is the formation of very numerous layers of cork in the cracks

caused by the splitting of the leaf. In older leaves the cork formed along the fissures originates mainly from the layer of palisade cells beneath the stomata and hypodermal fibres and is the type which occurred in the majority of cases described by Bachmann[1]. Of the two daughter cells, the outer one becomes a cork cell, whilst the inner undergoes further divisions, and, as each palisade cell divides many times, long radial rows of cork are produced from one mother cell. According to Bachmann in *A. Cunninghami*, rows of cork blisters occur, corresponding in position with the longitudinal rows of stomata, and due to the activity of cork meristems in the mesophyll which ultimately causes the epidermis to burst.

In *A. imbricata* the author gained the impression that cork formation usually follows the tearing of the leaf surface and hence it is due mainly to the radial expansion of the axis. The effect of this is seen first in the leaf cushion and leaf base and eventually in the lamina. Generally the splitting occurs along the line of least resistance, that is along a longitudinal row of stomata (beneath which the hypodermal fibres are less abundant) but this was not always the case. When the crack occurred in the stomatal region, the ribs of fibres from either side were seen later as borders to the torn edges, which appeared raised owing to meristematic activity beneath. (Fig. II). Frequently an early stage of cork formation is indicated by divisions in the palisade cells around the respiratory cavity and their proliferation towards the guard cells, thus causing occlusion of the cavity. Later the cork layers follow an undulating course beneath the alternating fibre groups and stomata. The depth of cork is greatest beneath the stomata and in the fissures themselves. The external layers proliferate into the open crack, whilst the inner part of the cork tissue may extend in as far as the spongy mesophyll. Towards the adjacent undamaged part of the leaf, the number of cork layers decreases, but these always extend for a considerable distance into the adjoining healthy palisade parenchyma. In the leaf cushions cork may become continuous over the whole surface and link up with that of the stem cortex.

No interruption occurs in the cork layers beneath the crack, so that the similarity with a lenticel is only superficial. The first formed daughter cells which lie directly underneath the fibres and stomata have a wider lumen and later become filled with phlobaphenes. Cork blisters often occur in young leaves and consist of a central area of dead cells occupying the whole width of the mesophyll, surrounded by living cells of palisade and spongy mesophyll in which cell divisions occur.

In older leaves the sharp apex often turns brown and if a larger part of the leaf thus changes colour some splitting may occur ; cork is then formed beneath the dead region, but the wound effects also spread to the adjacent green part of the leaf.

The microchemical and structural changes in the pathological areas which include interesting stages of breakdown of fibre walls bordering on the fissures and on the cork are described in another paper to be published.

I wish to express my sincere thanks to Professor J. H. Priestley for providing me with the opportunities for carrying out this investigation and for his continued interest in the work, and to Miss L. I. Scott for her kind help in the preparation of this paper. I am also glad to express my indebtedness to the Earl of Stair and his head gardener, Mr. R. W. Rye, for the permission to take samples from the *Araucaria* trees on the estate of Castle Kennedy.

I would like to take this opportunity of thanking most sincerely those kind friends who have made it possible for me to work at the University of Leeds.

References

[1]Bachmann, E. ' Über Korkwucherungen auf Blättern.' *Jahrb. f. wiss. Botanik*, 12, 191-236, 1879/81.

[2]Bean, W. J. *Trees and Shrubs hardy in the British Isles*. Vol. I, p. 199, 1921.

[3]Elliott, J. H. ' The development of the vascular system in evergreen leaves more than one year old.' Appearing in *The Annals of Botany*.

[4]Feustel, H. ' Anatomie und Biologie der Gymnospermenblätter.' *Beihefte Bot. Centralblatt*, 2 Abt., 38, 177-257, 1921.

[5]Haberlandt, G. *Physiological Plant Anatomy*, p. 111, fg. 25, London, 1914.

[6]Mahlert, A. ' Beiträge zur Kenntnis der Anatomie der Laubblätter der Coniferen.' *Bot. Centralblatt*, 24, p. 215, 1885.

[7]Seward, A. C., and Ford, S. O. ' The Araucariaceæ, recent and extinct.' *Phil. Trans. Roy. Soc.*, B. 198, 305-411, 1906.

FULMAR PETRELS NESTING ON THE FARNE ISLANDS

H. B. BOOTH

In *The Naturalist* for 1935, p. 231, Mr. Edmondson recorded the first nesting of a pair of Fulmar Petrels on the Farne Islands. I was there on June 6th of this year, and there were then four birds incubating on the cliffs of the Inner Farne Island. Although this was a large increase in the numbers of nesting birds it may not mean a large increase in population, as there only appeared to be five—or at the most six—pairs of Fulmar Petrels present in all.

1936 Sept. 1

BEES IN A BUSH

D. W. BEVAN

I BEG to report an extraordinary episode in bee-life, the like of which I have not seen in over thirty years of bee-keeping.

On Wednesday, July 22nd, I received a note from Mr. T. N. Roberts reporting a swarm living (not swarming) in the centre of a gooseberry bush, and building comb and storing honey. The following day was probably in this district the very worst day of this wretched summer, with

continuous rain. I assumed the bees must have perished, and did not visit them. But on Bank Holiday, after thirteen days, mostly rainy and culminating in yesterday's disastrous Sunday, I had a second note from Mr. Roberts and paid the colony a visit.

There are now four parallel combs, the longest eleven inches deep, the others some ten and nine inches, hanging to the bases of the branches in the centre of the bush. The bees are active, and I failed to find a single dead bee on the ground. This must surely be a rare occurrence for this climate. [The photograph, by Mr. Roberts, shows the condition in Mid-August.]

BRANCHING IN THE SYCAMORE (*ACER PSEUDOPLATANUS*)

HAROLD BARNES, B.Sc., B.A., AND JOHN D. DAVEY

THE results of this investigation are shown in the figures, which are drawn to scale, the branches being represented as lying in one plane. The normal method of branching in the young tree would appear to be racemose. This is shown in Fig. I which represents a tree of five years old. (The figures in brackets give the age of the branch, while the double lines indicate girdle scars, which are not always shown in the older branches.) It is seen that a number of lateral branches are developed each year, from buds formed during the previous year. These branches are of two types ; first, large branches which grow at a rate comparable to that of the main axis (major branches), and secondly branches which grow at a much smaller rate, *i.e.* dwarf branches. The major branches give rise to second order branches—both dwarf and major—whilst the dwarf branches rarely bear lateral shoots. Branches of an intermediate character are not entirely absent, but there is a fairly clear distinction as the following figures for three young trees show.

Type.	*Tree.*	*Average Growth Per Year.*	*Maximum.*	*Minimum.*
Dwarf.	I	3·9 cms.	4·8 cms.	1·0 cms.
,,	II	2·3 ,,	6·5 ,,	0·5 ,,
,,	III	2·0 ,,	6·0 ,,	0·9 ,,
Major.	I	13·0 ,,	17·5 ,,	9·5 ,,
,,	II	13·1 ,,	33·0 ,,	4·0 ,,
,,	III	19·0 ,,	40·0 ,,	7·0 ,,

The angle at which the branches emerge is not very constant ; out of thirty-one angles measured, the values ranged from 40° to 80°, but a large proportion was found round 70°.

As the tree grows many of these dwarf branches, on the trunk particularly, assume a characteristic curved appearance. Dwarf branches sometimes arise from dormant buds. It may be noticed that, as a general rule, the two opposite branches of a pair rarely grow the same amount in their first year, and this lack of symmetry is evident in many cases in the bud condition. These inequalities frequently disappear in subsequent years—that is to say, a branch which at the end of its first year is larger than its opposite branch, is not necessarily so at the end of the second year.

While this is the normal method of branching in the sycamore, variations are frequently found. The first type of variant is shown in Fig. II. This is due to the death of the terminal bud of the main axis, and dying back to a pair

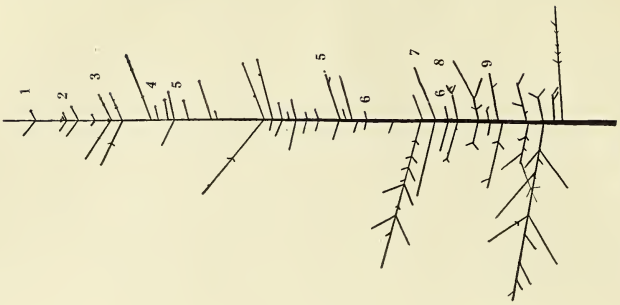


Fig. V

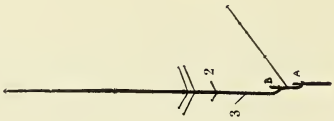


Fig. IV

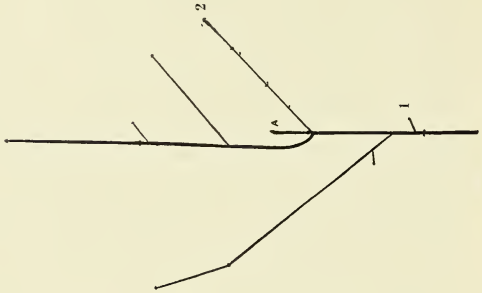


Fig. III

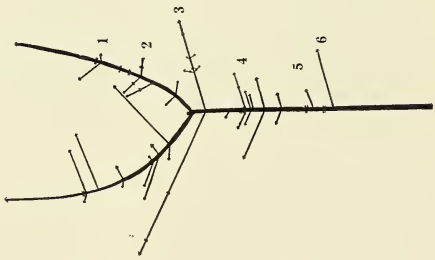


Fig. II

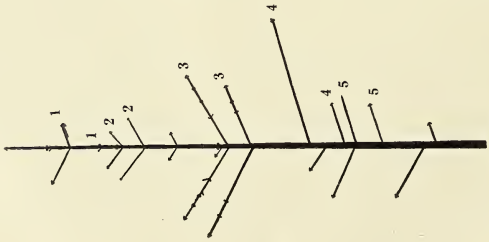


Fig. I

of lateral buds. The dead main axis persists for some time, but the growth is continued by the two lateral branches, which give major and dwarf laterals as did the primary axis. The two lateral branches tend to come more into the vertical than the average lateral branch.

Frequently, however, when the primary axis dies back, growth is continued in the vertical direction by only one of a pair of lateral buds. One of the lateral branches turns upwards and gives a false axis—often difficult to detect after a few years of secondary thickening—while the other lateral bud develops laterally in the normal way. This is illustrated in Figs. III and IV. In Fig. IV dying back has occurred twice.

Fig. V shows a ten-year-old tree. Here the major lateral branches of the first order, have well developed second order branches of the major and dwarf type. It will be noticed that the dwarf branches in an older tree frequently show dichasial branching. This is due to the formation of flowering shoots, and it would seem that the ultimate—or at any rate, potential, function of dwarf shoots is to bear flowers.

In a larger tree, the major branches of the third order exceed the length of the second order axis, and this will tend to give the tree a more ' rounded ' appearance. There are numerous dwarf shoots which have borne flowers.

RECORDS

THE following additions to the Fungus Flora of Yorkshire have been collected in the Whitby area. Specimens were submitted to the late Mr. F. A. Mason, F.R.M.S., to whom I was greatly indebted for his kindness in determining many interesting fungi sent to him during the past twelve years.

Sarcoscypha coccinea (Jacq.), Fr. var. *jurana* Boud. Mulgrave Woods, 23/1/35. N. Britten. Specimens of this fungus were found by Mrs. Britten growing on moss-covered branches, along with the type. These were submitted to Mr. Mason, who in a letter dated 27/1/35, suggested that they were the above variety. He forwarded a specimen to Mr. Carlton Rea, who confirmed the determination. In a letter dated 1/2/35, Mr. Mason wrote, ' there is no published British record of this variety, so your specimens are an interesting addition to the British list, as well as an addition to the Fungus Flora of Yorkshire.'

Cylindrosporium myosotidis Sacc. Raithwaite, 29/5/35. H. Britten. Mr. Mason to whom specimens were submitted, in a letter dated 2/6/35, says, ' this is new to Yorkshire.'

Entyloma fergussoni B. & Br. Raithwaite, 29/5/35. H. Britten. In a letter dated 16/6/35, Mr. Mason to whom specimens were submitted, says, ' new to Yorkshire.'

Among many other fungi collected the following is recorded as new to North-east Yorkshire, V.C.62.

Claviceps purpurea (Fr.) Tul. f. sp. *lolii* Staeg. Whitby, 14/9/35. H. Britten. Specimens were submitted to Mr. Mason, who in a letter dated 3/7/35, wrote, ' an addition to North-east Yorkshire. —H. BRITTEN.

HABITATS OF SPECIES OF JUNCUS

W. H. PEARSALL, D.Sc.

THERE is very little reference in the literature of the subject to the decided localisation of certain common species of *Juncus* to rather definite habitats, and it seems to be a subject which would repay investigation. *Juncus effusus* appears to have the widest habitat range of the commoner species and to have few special requirements beyond an adequate water supply. *J. conglomeratus*, on the other hand, seems to be confined to less acid and comparatively inorganic soils and it is definitely a lowland plant. I have not noticed it above 800 ft. *J. inflexus* has the most limited range of this group of species and it appears to be present only or mainly on calcareous clay.

In a somewhat similar manner, *J. obtusiflorus* is typically confined to 'fen' soils, that is organic soils liberally supplied with lime and not markedly acid. The closely similar species, *J. sylvaticus* is, however, found on distinctly acid soils only, though normally these are characterised either by occasional flooding and silting or else by flushing from moving soil waters containing only a moderate supply of bases. *J. articulatus* is characteristic of gravel or of soils developed above gravel and subject to frequent flushing.

The most difficult habitat to define is that of *J. squarrosus*, although it is one of the commonest species on the Yorkshire hills. It is definitely a species of acid peat with rather stagnant soil waters. It is, however, nearly or quite absent on lowland moors and often comparatively scarce on upland moors which seem to be otherwise suitable. Its distribution as an abundant plant in Yorkshire seems to show some correlation with oxidised or redistributed *Eriophorum* peat as well as with comparatively severe grazing, and it is possible that, owing to its habit of growth, it withstands grazing better than others of the moorland species. Possibly also, its seeds may be distributed by animals as are those of *J. effusus*.

A FISH FROM THE INGLEBOROUGH CAVES

H. B. BOOTH

IN an interesting note in *Country Life* of August 1st, p. 129, Mr. Sidney Robertshaw records having caught a fish in Douk Cave, Ingleborough. This was submitted to the Natural History Museum, South Kensington, and was pronounced to be a trout (*Salmo trutta*). It was very pale in colour but the eyes appeared to be quite normal.

UNCOMMON AND INTERESTING ALGAE IN THE LAKE DISTRICT

W. H. PEARSALL, D.Sc.

During the present spring a number of uncommon algae have been seen in the Lake District by workers at Wray Castle. The affinities of some of these are obscure and they require further observation before being placed on record. There are, however, several interesting species which can be identified with certainty, and which are therefore recorded here.

Mr. J. W. G. Lund obtained two interesting flagellates. One of these was *Gonyostomum semen* Diesing, only recorded for this country by A. Malins-Smith from Austwick Moss (*The Naturalist*, 1933, p. 49). This is a striking green form with prominent and radiating refractive bodies (trichocysts) in the outer part of the protoplast. It was observed in mud collections from two small peaty tarns (Robinson T. and Green T.) on Claife Heights, west of Windermere, the habitat being generally similar to that of *Sphagnum* pools in West Yorkshire.

A second rare flagellate found by Mr. Lund was *Gymnodinium aeruginosum* Stein, a peridinian with conspicuous blue-green chromatophores, and dimensions of about 33μ long and 21μ broad. It was observed in collections from the mouth of the Blelham Beck running into Windermere, a habitat of more lowland type, with abundant reeds, water-lilies, *Potamogeton alpinus* and *Sparganium minimum*. This alga has only previously been recorded from ponds in Warwickshire.

From Ennerdale, Mr. Lund obtained *Hydrurus foetidus* (Vill.) Kirchn., an alga which although well known is very rare in Britain. This occurred in great abundance in the stream running into the North-east corner of Ennerdale Water, and also on the gravel of the lake margin in the same region. Some years ago, I saw it in limited quantity in a stream on the North side of Wastwater.

Another interesting find in Ennerdale was that of *Prasiola crispa* (Lightf.) Menegh. on the rocky island in the middle of the north end of the lake. These rocks are used as a stand by cormorants and gulls when fishing, and are fouled by their excreta. The presence of *Prasiola* in such a situation is of considerable interest, since the alga has been recorded from several habitats rich in nitrogen and notably from penguin rookeries in the Antarctic.

From the plankton of Wray Mires Tarn, Mr. A. D. Peggs obtained *Eucapsis alpina* Clements and Shantz, a form like *Merismopedia* but in cubical colonies, the cells dividing in

three planes. This has previously been recorded from Clare Island and Wicken Fen only.

The last record is that of *Hyalobryon ramosum* Lauterborn, a colonial form with the cells in long cylindrical cases somewhat resembling those of *Dinobryon*. This species has been recently recorded for Cheshire by Williams (*North-western Naturalist* 8 and 9, 1933-4). It was observed frequently in water collections from Slew Tarn, but there is a strong probability that it is widely distributed in the district as I have seen the cylindrical cases previously on several occasions from peaty tarns, although owing to the rapidity with which the flagellate cells escape on standing indoors, it is not usually certainly identifiable. *Heteromastix angulata* Korst, also first recorded by Williams (*loc. cit.*) for this country was also observed by Mr. Lund.

CREPIS BIENNIS LINN., IN YORKSHIRE

ROBERT J. FLINTOFF

I HOPE I may be permitted to state briefly the facts relative to certain plants of the genus *Crepis* growing in three different localities in Yorkshire.

1. At Burton Agnes, near Driffield, East Riding of Yorkshire, in the cemetery. Found by Mr. Major Lawson, of Bridlington, in 1923. Plentiful.

2. At Howden, East Yorkshire, by the side of the road opposite ' Rowland Hall Farm.' Found by Mr. A. E. Greaves, of Goole, in 1915. Plentiful.

3. At Allerston, near Pickering, North Riding of Yorkshire, on waste land near the sand-pit. Found by W. C. Worsdell, of Kew, James Green, of Thornton-le-Dale, and R. J. Flintoff. One plant only and none seen since this plant was found.

All these plants have been named *Crepis biennis* Linn by Professor Babcock, Professor of Genetics in the University of California.

' The rest is silence.'

REFERENCES:

The Naturalist.

1. 1927, December, No. 863.
2. 1931, May, No. 892.
3. 1932, November, No. 910.
4. 1933, March, No. 914.

North-Western Naturalist.

5. 1934, March, Vol. IX, No. 1.
6. 1935, June, Vol. X, No. 2.

B.E.C. Report.

7. 1933, Vol. X, Part iii, page 625.
8. 1935, Vol. XI, Part i, page 138. 416/3.

Journal of Botany.

9. 1935, August, Vol. 73, No. 872.

In Memoriam

ERNEST HALLOWELL
1865—1936

Member of the Y.N.U. from 1919 (Member of the Bryological Section and Permanent Member of the General Committee).
Member of the Halifax, Sowerby Bridge, and Overden Naturalists' Societies.
For twenty years Honorary Secretary of the Sowerby Bridge Free Library.
For several years adjudicator for the Gibson Dixon Herbarium Prize offered annually to Pharmaceutical students at the Halifax Technical School.
Foreman Warehouseman with Messrs. Clay and Horsfall, Worsted Spinners, with whom he remained forty years, retiring in 1931.

A BUSY life, whose leisure was shared between social duties and the study of natural history, has run its course ; the affectionate esteem in which Ernest Hallowell was held by his neighbours shows that straight simple living is still appreciated in the twentieth century.

In early life he showed ability in mathematics, and qualified as a teacher of elementary botany, conducting classes in the Sowerby Bridge Technical School, at West Vale and elsewhere in the district ; he was interested in the Workers' Educational Association, and by the help of its lectures acquired skill in the preparation of vegetable tissues for microscopical examination. He not only knew the flowering plants, but was interested in the life history of cryptogams ; in a room kept for such work he cultivated mosses from spores and by the successful dissection of such home-grown material, showed in the inflorescences of *Funaria hygrometrica* repeated occurrences of a synoicous instead of the more usual autoicous state (see *The Naturalist*, 1934, p. 154). On one occasion he found a weak place in the armour of local bryologists by asking ' when ' and ' where ' unfertilised archegonia of Sphagna could be found ; that matter he pursued until able to demonstrate to his friends those small objects gathered on the adjoining moors.

His death, from nephritis and cardiac trouble, occurred on June 3rd ; by his special request his ashes after cremation were scattered by two friends on Norland Moor at a spot near where he used to find sundew and bog asphodel.—W.H.B.

CORRECTION

Conchology : Mollusca at Hawes. In the report on mollusca on p. 187 of the August issue, two varieties of *Arion* given as *A. ater* var. *atterriona* and *A. subfuscus* var *blunnea* should be respectively var *atterimma* and var. *brunnea*. For Whether Fell read Wether Fell and for Hardraw Glyll read Hardraw Ghyll.

THE HABITATS OF FRESHWATER MOLLUSCA

W.H.P.

A RECENT publication of great interest to conchologists and to freshwater biologists in this country is the paper by Professor A. E. Boycott on the habitats of freshwater mollusca in Britain (*Journ. Animal Ecology*, 5, pp. 116-186, 1936). This paper is of a similar character to the earlier one on land mollusca which appeared in the *Journal of Ecology* in 1934 (p. 1). It first discusses the biology of the group and the habitats of the various species. The individual habitat factors such as altitude, lime, acidity, temperature and pollution are then considered in detail and finally lists of the mollusca of different habitats are given. Some idea of the amount of information contained in this work may be obtained from the fact that 295 papers are cited. This bare fact does no justice to the breadth of outlook which characterises the whole work and it must remain for many years as a model of the broad survey in animal ecology.

It may be of interest to northern naturalists to know that the ' information about geographical distribution and localities is largely derived from the accumulation of data made with such devotion by W. D. Roebuck for J. W. Taylor's *Monograph* and for his own *Census of Distribution*, maintained since his death by the Conchological Society.'

THUIDIUM ABIETINUM B. AND S. AND *T. HYSTRICOSUM* MITT.

CHRIS A. CHEETHAM.

THESE two species have been confused in my mind for many years. Originally the small *Thuidium* found on the floors of some quarries on the Magnesian Limestone was considered to be *T. abietinum* B. and S., but by Dr. Braithwaite in *The British Moss-flora* in 1896 the Yorkshire plant from Wetherby is put down as *T. hystricosum* Mitt., and Llewellyn J. Cocks, in *The Naturalist*, 1897, p. 190, accepted this name for the plant from all the other Yorkshire habitats.[1] I found it difficult to determine, and at the time had no type specimens to refer them to. The excursion to Aberford has brought the question up again, and I am very glad to have had the following opinion expressed by Mr. W. H. Burrell on the plant from Hook Moor.

Aberford *Thuidium*. Although Braithwaite, Barnes, etc., are against me, I cannot see *hystricosum* in your plant from Hook Moor. Possibly orthodox views *were based on better*

[1] And this was Mr. Ingham's opinion.

grown specimens showing more vigorous growth with larger and more elongated leaves and leaf cells, but here, as in specimens gathered by us twenty years ago, the cells are short, many $8\times8\mu$, some more elongated up to $15\times8\mu$ at apex of branch leaf ; the leaf margins are recurved, not plane as claimed for *hystricosum*. Husnot examined a packet of *hystricosum* given him by Mitten and failed to find that it differed from *abietinum*.

In the third edition of *The Students' Handbook of British Mosses*, by H. N. Dixon, *hystricosum* is reduced to a sub-species under *abietinum*. I have wondered if varying seasons give different growths of many of our mosses ; one I have in mind is *Thuidium delicatulum* Mitt., where the plant as I have watched it over a number of years has certainly had a varying appearance, and it would be a useful subject for our Bryological Section to revisit all the old stations and see if typical *hystricosum* is to be found in any of them, these would include Ingbarrow Farm, Wetherby ; Kirk Deighton ; Sutton ; Jackdaw Crag Quarry, Tadcaster ; Stubbing Moor ; Rigton ; Hook Moor ; Knaresborough ; and Garforth.

DIPTERA RECORDS

CHRIS. A. CHEETHAM

Though this 1936 season is distinctly poor from the entomologist's viewpoint, some few interesting species have been seen, and the following were noted in the first week of July at Austwick and the adjacent Lawkland Moss ; *Pyrophæna rosarum* F. which has been seldom caught in Yorkshire, and *Platychirus fulviventris* Mcq. which was fairly plentiful; this again is a rare insect in our county. At the same time at Ling Ghyll, I found *Orimarga virgo* Ztt. emerging from a wet vertical rock face showing the typical pale pink body which attracts attention and seems quite characteristic of the species although this colour is soon lost. On the summit of Ingleborough during the same week, Dr. W. H. Pearsall noted a Tipulid in great plenty and brought me some for identification; they proved to be *Tipula excisa* Schum., a species I have found singly many times but only once in quantity, this being on Cautley Calf, June 22nd last year.

The other species I wish to record is *Oxycera pardalina* Mg. which I caught in Mickley Woods near Tanfield, but on the south side of the river. I have only seen this species in two other Yorkshire places.

1936 Sept. 1

YORKSHIRE NATURALISTS AT HACKNESS

JULY, 11th, 1936

The records of our excursions in 1936 seem to be one long story of bad weather, but although the thunder rain of the previous day undoubtedly kept many away, the attendance was very satisfactory. Our leaders had previously wished to have made the meeting a weekend, and they tried to show us in one day what would have done for three. As things turned out a long walk was quite the best thing, for wet vegetation and uncertain weather made collecting almost impossible. Mr. Bevan knows his district intimately. and his short descriptions of the causes of the scenery were very helpful and much enjoyed by his hearers. He took the chair at the meeting when a very hearty vote of thanks was passed to the Rt. Hon. Lord Derwent for the permission to visit his estate.

Diptera : Chris. A. Cheetham writes : The wet vegetation made sweeping out of the question, and the following dipterons were taken from flowers like the Cow Parsnip ; the Common Tipulid was *Tipula paludosa* Mg., with odd specimens of *T. fulvipennis* Deq. (*lutescens* F.), *T. cava* Ried., *T. fascipennis* Mg., *T. unca* Wied. (*longicornis* Schum.), a few *Pachyrrhina histrio* F. (*lineata* Scop.), *Limnophila meigenii* Verr. (*phæostigma* Schum.), and *Limnobia macrostigma* Schum. Among the Syrphidæ were *Volucella bombylans* L., *V. pellucens* L. (very plentiful), *Eristalis horticola* Deg., *E. pertinax* Scop., *E. rupium* F., *E. arbustorum* L., *Chilosia illustrata* Harr. (plentiful), *Myiatropa florea* L., *Chrysogaster solstitialis* Fln., *C. splendens* Mg., and *Liogaster splendida* Mg. On the heather on the moor *Micropalpus vulpinus* Fln. seemed plentiful, and near at hand were *Oliveria lateralis* F. (*Eriothrix rufomaculatus* Deg.) and *Graphomyia maculata* Scop. with plenty of the two Emphids, *E. tessellata* F. and *E. trigramma* Mg., whilst a single *Conops flavipes* L. was taken among a number of similar looking fossor bees and sawflies which Mr. R. Butterfield has kindly identified as *Crabro vagabundus* Pz., *C. cepholotes* Pz., and *Allanbus vespa.*

Lepidoptera : Miss Ivy Thomas writes : The day of the Hackness excursion was not a really good one for lepidoptera owing to the lack of sunshine, but quite a few of the commoner species were observed.

Vanessa urticæ (Small Tortoiseshell). Larvæ fairly common.
Argynis aglaia (Dark Green Fritillary). A few butterflies freshly emerged.
A. selene (Small Pearl-bordered Fritillary). Common.
Epinephele (*Maniola*) *jurtina* (Meadow Brown). A few.
Lycæna icarus (Common Blue). Common.
Augiades sylvanus (Large Skipper). A few.
Lasiocampa quercus var *callunæ* (Northern Eggar). Moths seen on the wing and a number of larvæ collected off the heather.
Agrotis strigula (True Lover's Knot). One specimen taken.
Anarta myrtilli (Beautiful Yellow Underwing). Quite a number flying on the moors.
Eupithecia lariciata (Larch Pug). Taken in the pine woods.
Metrocampa margaritaria (Light Emerald). One specimen taken on the moor.
Ematurga atomaria (Common Heath). Abundant.
Bupalus piniaria (Bordered White). Common in the woods.
Perconia strigillaria (Grass Wave). Fairly common.
Zygæna filipendulæ (Six-spot Burnet). Abundant in Whisperdale.

Coleoptera : Mr. G. B. Walsh writes : Conditions were unfavourable for beetle-hunting. The vegetation was wet, the main part of the season

was over, and the ground covered was too great to permit of collecting. Beetles were, however, distinctly uncommon, and comprised only such common species as *Rhizophagus dispar*, *Rhagium bifasciatum* (larvæ only), *Rhagonycha fulva*, *Phyllobius* spp., *Otiorrhynchus singularis*, *Gonus scrophulariæ*. Under more favourable conditions this list could, of course, be enormously increased.

Flowering Plants : Dr. W. A. Sledge writes : No justice can be done in this account to the vegetation of the official route traversed as the writer left the main party early on and devoted the greater part of the day to a search for *Pyrola media* on Seamer Moor, and subsequently worked part of Forge Valley. Only flowerless plants of a *Pyrola* were seen on Seamer Moor, and as *P. minor* also occurs there identification was impossible. In Lowdale a specimen of *Lilium Martagon* was found in a hedge bank and higher up the dale *Vicia sylvatica* was seen in two places, whilst *Carduus nutans* and *Cnicus eriophorus* were noted on the calcareous plateau between Lowdale and Seamer Moor. In Forge Valley *Carex strigosa* was seen in one of its few Yorkshire localities, and the New Zealand Willow-herb, *Epilobium nummularifolium* was seen on a wall in Hackness where it has been known for many years. Other species noted include the following :—

Corydalis claviculata.
Acer campestre.
Hypericum pulchrum.
H. montanum (Forge Valley).
Myrrhis odorata.
Verbascum Thapsus (Quarry near Hackness).
Empetrum nigrum (Seamer Moor).
Listera ovata (Seamer Moor).
Orchis elodes.
Habenaria viridis (Seamer Moor).
Carex pendula (Forge Valley).
C. remota
Bromus erectus.
Dryopteris aristata.
Polystichum aculeatum.

The following are taken from a list of plants recorded by Mr. Percy Burnett :—

On the walls of Hackness Church, *Lactuca muralis* Gærtn. and *Asplenium ruta-muraria* L.

The fields, hilly bank sides, and hedgebanks in Lowdale yielded *Lychnis Flos-cuculi* L., *Campanula latifolia* L., *Tragopogon minor* Mill., *Geranium pratense* L., and *Polygala vulgare* L.

Among many recorded in the pasture and cornfields of Whisperdale were *Spergula arvensis* L., *Scandix pecten-veneris* L., *Helianthemum Chamæcistus* Mill., and *Geranium dissectum* L.

The shady path clambering up to the moor from Whisperdales Farm showed a great abundance of *Melampyrum pratense* L. and some white forms were noticed. Here, too, was the Small Wintergreen, *Pyrola minor* L., in flower.

The moor was a little disappointing, but *Empetrum nigrum* L. was seen, as was also *Corydalis claviculata* D.C.

Other plants recorded from the hedgebanks, roadside walls, and waste places included *Ononis arvensis* L., *Scabiosa arvensis* L., *Thymus serpyllum* L., *Scrophularia nodosa* L., *Geranium molle* L., *Arenaria serpyllifolia* L., *Hypericum pulchrum* L., *Digitalis purpurea* L., and *Carex hirta* L.

The Entomologist's Record for July-August contains ' Ozoir-la-Ferriére : Puy de Dôme Mountain : and Le Mont Dore, France, in June-August, 1935,' by the late Rev. E. B. Ashby ; ' Notes on Collecting, etc.' ; ' Current Notes and Short Notices ' ; and supplements ' The British Noctuæ and their varieties,' by H. J. Turner ; and ' Notes on Egyptian Lepidoptera, observed at Reservoir, Aswan, between October, 1919, and April, 1922. V. Pyralidæ,' by K. J. Hayward.

GEOLOGICAL NOTES

T. SHEPPARD, M.Sc., F.G.S.

Geography, the Journal of the Geographical Association, for June, contains a series of articles on ' The Soils of Britain and their Classification,' by E. M. Crowther, W. G. Ogg, S. W. Woolridge, and L. Dudley Stamp. The same Journal also contains a paper of particular interest to our readers, ' The Lead Dales of the Northern Pennines,' by A. E. Smailes. This is illustrated by a number of maps and diagrams. The author concludes ' Recent developments have had the effect of welding the dales more firmly into the larger community of the province of North-east England rather than linking the dales together directly. Unity is being achieved through the medium of the larger organism, of which the dales are appendages. The dales are more closely related now as part of a whole, but the heart region of the province and its life is outside the dales, and the contacts and relationships of the dales are with the heart rather than with each other.'

The Quarterly Journal of the Geological Society of London, No. 366, has a paper by Dr. W. J. Arkell on ' The Ammonite Zones of the Upper Oxfordian of Oxford, and the Horizons of the Sowerbys' and Buckman's Types.' He deals at length with the species *Ammonites plicatilis* J. Sowerby, *A. catena* J. de C. Sowerby, and *A. perarmatus* J. Sowerby, and many other matters of interest to Yorkshire Geologists.

Part II of the *Summary of Progress of the Geological Survey of Great Britain and the Museum of Practical Geology for the Year* 1934 (H.M. Stationery Office. viii+65 pp. 1/6 net) has a paper on ' The Pleistocene Dreikanter in the Vale of York,' by W. Edwards. A fine series of these curious wind-worn pebbles, made when Yorkshire was under desert conditions, has been given to the Museum at Hull. Among the other memoirs in this interesting publication are ' The *Cyrtina septosa* Band in the Lower Carboniferous Succession of North Derbyshire,' by F. Wolverson Cope ; ' Notes on the Types and figured Specimens acquired from the late S. S. Buckman by the Geological Survey of Great Britain,' by C. J. Stubblefield ; and ' The Group of Large Carbonicolas which characterise the Base of the Middle Coal Measures,' by W. B. Wright. Specimens in Dr. Stubblefield's paper are enumerated from Redcar, etc.

A general description of an important feature in the new Geological Museum under the title of ' Geological Dioramas ' in the Museum of Practical Geology, by W. F. P. McLintock, appears in *The Museums Journal* for June.

The Proceedings of the Yorkshire Geological Society issued on March 7th, contain the following valuable memoirs : ' The Glaciation of the Eastern Side of the Vale of York,' by Kenneth Harrison ; ' The Development and Septal Notation of the *Zoantharia rugosa* (Tetracoralla),' by R. G. S. Hudson ; ' The Lower Carboniferous Corals : *Rhopalolasma*, Gen. Nov. and *Cryptophyllum*, Carr.,' by the same author ; and ' On *Daviesiella carinata* (Garwood),' by F. Wolverson Cope. There is also Professor W. G. Fearnsides' Presidential Address on ' The Framework of the South-east Pennine Coalfield.' He concludes : ' Within the coalfield area there is now good and sufficient evidence that the folds and faults affecting the present lie of the exposed Coal Measures, and those which must determine the extent and plan of future coal-mining developments, belong to the same systems as in the up-folded Pennine and Peak District areas. The linking of these within with those beyond the framework structures, and the appreciation of the part they play in determining the eastern limits of the coalfield will not become definite until the whole story of Carboniferous stratigraphy is known.'

In the Brotherton Library at the Leeds University is the extensive

catologue of author's copies and memoirs, sent to Mr. T. Sheppard during the past forty-five years. They mostly refer to Yorkshire Geology, Archaeology and Natural History, and have been presented by Mr. Sheppard for the use of students.

MUSEUM NOTES

T. SHEPPARD, M.Sc., F.G.S.

The *Report of the Forty-second Congress of Archæological Societies* contains an address on ' Societies and Museums,' by Frank Stevens. In this he states that ' in very many cases the Municipal Museum is only a branch of the public library, usually one or two rooms with a passage, and may be further handicapped by an art gallery as well, all under one roof and one librarian. It is almost impossible for a busy librarian to carry out this triple duty. It should not be expected that one man should perform the duties of three different officials. More often than not, the library expands and both museum and art gallery suffer. Too often the Municipal Museum is relegated to the top floor and approached by a staircase, the walls of which are crowded with exhibits.'

In the *Fourteenth Annual Report of the Worthing Archæological Society*, the late Marian Frost's Presidential Address to the Society entitled ' The Saxon Cemetery at Highdown, Sussex, and the Romance of Burial,' is published in extenso ; and in the same Journal Mr. T. Sheppard describes a ' Rare Bronze Age Cinerary Urn found near Broadwater,' which was put together, from a number of fragments, at the Hull Museum.

In *The Museums Journal* for May, is Mr. R. W. M. Wright's Presidential Address to the South-western Group of Museums entitled ' Museums in the Modern Age.' He concludes : ' museums to be fully alive must appeal to citizenship as a whole, for it is the human aspect of our work which is of greatest importance, for whether we work in groups or as individuals our aims are the same. . . . Naturally, increased responsibilities demand increased effort, but I am confident that with the advancing tide of public service there is a growing enthusiasm and interest, compatible with the dignity of our profession, in museums and museum work.'

In the *Journal of the Barbados Museum and Historical Society*, Volume III, No. 4, is printed, in extenso, a lecture on ' Museums : Past and Future,' which was given in Barbados on May 4th by T. Sheppard. The sub-headings of this paper are : ' The British Museum Lottery,' ' The Formation of Provincial Museums,' ' The Importance of Publicity,' a ' " Recent Additions " Case,' ' Hull's Shop Window,' and ' The Future of Museums.'

HAWES FUNGI

MR. W. G. BRAMLEY writes : I have just received (9/8/36) the following identifications of some Hawes Fungi for which I am indebted to Mr. E. W. Mason of the Imperial Mycological Bureau.

Melanomma callicarum (Sacc.) Berb.
Leptospora spermoides (Hoffm.) Fckl.
Zignoella ovoidea (Fr.) Sacc.
Solenia anomola (Pers.) Fr.

These are additions to the list published on pp. 187, 188 of the August number.

Mr. E. W. Mason states that he has not seen *Melanomma callicarum* previously, so this is a particularly interesting record.

BRITISH ENTOMOLOGISTS AT CAMBRIDGE

W. D. HINCKS

THE Society for British Entomology held its Second Annual Congress at Cambridge from June 26th to 29th in co-operation with the Cambridge Natural History Society.

In every way the function was an outstanding success. The varied and instructive series of lectures presided over by Dr. A. D. Imms, M.A., Sc.D., F.R.S., F.R.E.S., in the up-to-date advanced lecture theatre of the Department of Zoology were full of interest. A field excursion to Wicken Fen, favoured by fine weather, proved profitable as well as interesting, and the social side of the Congress was well provided for in a dinner and lunches in the historic hall of Christ's College.

A slightly larger attendance was recorded than at the Oxford Congress last year, but it is to be hoped that more and more entomologists interested in the British fauna will support these enjoyable gatherings.

Congratulations are due to the organisers and workers responsible for the success of the Congress.

Reading is to be the venue for 1937.

THE BRITISH BRYOLOGICAL SOCIETY

MR. D. A. JONES has resigned the secretaryship of this Society, an office he has held since the Society was formed by the amalgamation of the two sections of the Moss Exchange Club in 1922 ; he held the same office from 1903 for the junior section of the Exchange Club. The new Secretary is Mr. A. Thompson, of Sheffield, a member of our Union. In this way Yorkshire is again helping bryological work as it did at the time when Wm. Ingham held the office of Secretary of the senior section of the Exchange Club from 1903 to 1921, resigning at the time when this was merged into the British Bryological Society.

Mosses have interested Yorkshire naturalists since the Union was first formed, and it is pleasing to note that workers in the subject are still keeping up this reputation.

INCORRECT RECORD

M. D. BARNES

IN a list of Coleoptera recorded from the Hawes Meeting of the Y.N.U. and appearing in the Report (page 186, August *Naturalist*), *Lyperosomus cristatus* (Duft) was wrongly included. The beetle in question is *L. adstrictus* (Esch). The writer is much obliged to Dr. W. J. Fordham for the correction of this unfortunate error.

REVIEWS AND BOOK NOTICES

Phytoplankton and the Herring, by **R. E. Savage and R. S. Wimpenny.** Ministry of Agriculture and Fisheries Fishery Investigations, Vol. XV, No. 1, 1936, pp. 88. 4/6 net, postage extra. (H.M. Stationery Office, Adastral House, Kingsway, W.C.2.) During 1933 and 1934, exceptionally large numbers of diatoms, congregated in distinct patches, were observed in various parts of the North Sea. In the earlier year, an exceptionally good and early herring catch was anticipated but these anticipations were not realised. It was, however, observed that the herrings tended to mass against the diatom patches and an examination of the data suggests that the herrings are unable or unwilling to pass these dense growths of algæ. The herrings were thus very late in arriving in the Southern part of the North Sea in 1933, though in 1934 the diatom patches were not sufficiently continuous to form a barrier but only restricted the movements of the fish. A further examination of the evidence shows that zooplankton animals also tend to aggregate

against the diatom patches, while in the patches juvenile forms of the zooplankton are more common. The hydrological evidence is given as to the origin and effects of these phenomena.

The Animal World, by **J. G. Needham**, pp. 122, 92 illustrations. 4/6 net. (Chapman and Hall, Ltd.). This book deals in an elementary manner with the salient features of animal life. It starts in a somewhat original manner. The author points out that only a limited number of domesticated animals are found, and he proceeds to trace the factors which have led to this peculiarity. He then discusses the differences between plants and animals, animal form, growth, movement, defence, and social life. His style is interesting and the illustrations are good. As an introduction to the relations between animals and man, this is a distinctly interesting effort.

The Smallest Living Things, by **G. N. Calkins,** pp. 135, 4 illustrations. 4/6 net. (Chapman and Hall, Ltd.). The scope of this book is that of an introduction to microscopic organisms and cells. It is however, in no sense an introduction to the methods used, though these are mentioned, or a catalogue of the different forms of microscopic life, though a wide range of forms is described. It is rather an attempt to describe the significance of the characteristics of micro-organisms and to use these to learn something of the properties of the living protoplasm. It seems probable that it will prove an exceptionally interesting book to the amateur microscopist and it will certainly help to give him an insight into the problems affecting the creatures he studies. The illustrations are largely original and they are very good. This is undoubtedly a book of quite general interest.

Marine Boring Animals, by **W. T. Calman,** revised by **G. I. Crawford,** pp. 38, 21 figures. 1/- net. British Museum (Natural History) pamphlet. Economic Series, No. 10. This pamphlet gives a general account of the natural history of the shipworm and other wood and rock boring marine animals. The damage caused by *Teredo* in submerged timbers is, of course, well known, but it is not so generally realised that even rocks and concrete are by no means immune from the attacks of marine boring animals. Originally written around an exhibit in the Natural History Museum, this little work has been recently revised and re-issued. It is hardly necessary to say that it is quite up to the high standard of this series of publications, and is a useful summary of the information available.

NEWS FROM THE MAGAZINES

In the *Journal of Botany* for July there are some notes on Yorkshire plants by J. Edward Lousley; he deals with forms of the Wild Columbine. At meetings of the Y.N.U. Botanical Section mention has been made of the difference of the colour of the flowers of the Columbine on limestone and on gritstone soils, the former being a bright blue or white and the latter maroon. Mr. Lousley finds a difference in the size of the sepals, especially those of a plant growing in the hedgerows on the south side of the Craven fault near Austwick; this plant comes close to *Aquilegia atrata* Koch. according to the published description, but Mr. H. W. Pugsley, who knows *atrata* well, states that the Yorkshire plant is not this species. The other plant of interest to Yorkshire botanists mentioned in the article is the Cranberry. Mr. W. H. Burrell pointed out the two types of berries many years ago and these are usually found where the plant is plentiful, one having the usual crimson fruit, the other being more elongate and yellow-brown in colour with many brown spots. Mr. Lousley mentions these fruit differences and says no correlated

differences in leaves or flowers have been observed ; he gives many references to previous observations and published articles on them.

The Journal of the Ministry of Agriculture for June (Vol. XLIII, No. 3) contains a number of articles of which two are of entomological and mycological interest, namely ' The Chrysanthemum leaf miner and its control,' by H. W. Miles and M. Cohen, and the ' Bushy Stunt,' a virus disease of tomato,' by G. C. Ainsworth. There is also an article on ' The Stool Bent or Heath Rush (*Juncus squarrosus*),' by B. Thomas, which has ecological bearings. The July number (XLIII, No. 4) contains in addition to articles of agricultural interest, a report by R. Coles, on ' Egg quality, the influence of climate and soil,' which possesses some distinct zoological interest.

The Entomologist's Monthly Magazine for July contains ' The " Spruce Cone Bug," *Gastrodes abietis* Linn. (Hemiptera—Heteroptera : Lygaeidæ) (with plate),' by A. E. Aitkins ; ' *Obrium brunneum* Fab., a species of Coleoptera (Longicornia) new to the British List,' by P. Harwood and L. G. Cox (Dorset and Sussex) ; ' *Bythinus clavicornis* Panz., reinstated in the British List,' by H. Donisthorpe ; ' Notes on variations in the tarsal segmentation of two staphylinid beetles,' by J. H. Keys (*Atheta sordida* Marsh. and *Oxypoda opaca* Gr.) ; ' A new species of Melitomma (Col. Lymexylonidæ) from India,' by K. G. Blair (*M. albitarsis* Blair) ; ' Results of the Oxford University Expedition to Borneo, 1932. Passalidæ (Coleoptera),' by W. D. Hincks ; ' The parasites of British Birds and Mammals : IX—A bibliography of the papers containing records of Mallophaga (Biting Lice) from Birds and Mammals,' by G. B. Thompson ; ' The Brown Lacewing Flies (Hemerobiidæ) : their importance as controls of *Adelges cooleyi* Gillette,' by W. B. R. Laidlaw ; and one or two shorter notes.

The Journal of the Society for British Entomology, Vol. 1, Part 6, contains several interesting articles. Among these are ' British Ephemeroptera, Plecoptera and Trichoptera in 1935,' by D. E. Kimmins (88 species noted, some from Cumberland, Cheshire, Derbyshire and Westmorland) ; ' Chironomidæ from Grisedale Tarn, Westmorland,' by W. D. Hincks (with figure of hypopygium of *Pentaneura barbitarsis* Ztt.) ; ' Scottish Chrysopidæ in 1935,' by K. J. Morton ; ' The use of sweep-net samples in an ecological survey,' by J. R. Carpenter and J. Ford ; ' Breeding Records of Hymenoptera and Diptera,' by O. W. Richards ; ' A Further Record of the Hemiptera Heteroptera collected at the Imperial College Biological Field Station, Slough, Bucks.,' by W. H. Goddard ; ' *Eupithecia distinctaria* Herr.-Schäff. (Lep.),' by W. P. Curtis ; and ' Wild Pairing of *Taeniocampa gothica* Linn. with *T. stabilis* View. (Lep.),' by C. M. R. Pitman.

The Entomologist for August contains ' A List of British Gynandromorphous Specimens of *Argynnis paphia* Linn. (1758),' by S. G. Castle Russell ; ' Observations on the Biology of certain British Psyllidæ,' by G. Heslop Harrison ; ' New African Lymantridæ (Lep.),' by C. L. Collenette ; ' Migration Records, 1936,' by Captain T. Dannreuther (*Celerio galii*, West Hartlepool, June 24th, and larvæ at Birtley, County Durham) ; ' Notes on Braconidæ : XV—Microgasterinæ,' by C. Morley ; and several notes and observations.

The Entomologist's Monthly Magazine for August contains ' The Brown Lacewing Flies (Hemerobiidæ) : their importance as controls of *Adelges cooleyi* Gillette,' by W. B. R. Laidlaw (with plate) ; ' Occurrence of an Australian Beetle, *Anthrenocerus australis* Hope, together with *Attagenus piceus* var. *megatoma* F., at Finsbury,' by S. Wakely ; ' An Australian Dermestid Beetle *Anthrenocerus australis* Hope, in London,' by K. G. Blair ; ' *Disenochus munroi*, a new Hawaiian Beetle (Col. Caraboidea),' by R. C. L. Perkins ; ' The Ethiopian species of the *Fasciata* group of the genus *Bactria* (=*Promachus*) (Diptera, Asilidæ)' by B. M. Hobby (with figures) ; and several shorter notes.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post free 4/-.

The title of this book has been taken from "A Smuggler's Song" by Rudyard Kipling. Its setting is in the early days of the nineteenth century and faithfully depicts the characteristics of the Dales folk of that period, their wit, their capacity for driving a hard bargain, their love of the moors and sea, and their passionate devotion to smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Love and tragedy are intermingled, the whole being relieved by many humorous incidents, some of which take place at the market town which can be recognised as Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,

5 Farringdon Avenue, London, E.C.4.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S. — R. W. LLOYD, F.R.E.S.

H. G. CHAMPION, M.A., F.R.E.S. — F. LAING, M.A., B.Sc., F.R.E.S.

J. E. COLLIN, F.R.E.S. — H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

NATHANIEL LLOYD & CO., LTD., BURRELL STREET, LONDON, S.E.1.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and the connected Sciences. | Rundschau für Geologie und verwandte Wissenschaften | Rassegna di Geologia e delle Scienze affini.

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators.

Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liége (Belgique).

Annual subscription price:
35 Belgas, sent to Mr. G. TIBAUX, 35 rue des Armuriers, LIÉGE, BELGIUM,
also through a bookseller.

WALKS AND TALKS ON THE NORTH YORKSHIRE COAST AND MOORS

By W. RIDLEY-MAKEPEACE

128 pages, F'cap 8vo, stiff boards, rounded corners, three-colour design on front cover, profusely illustrated, and with folding map of the district.

1/- net,

post free **1/2.**

A little book of exceptional interest to walkers and tourists. In his description of eleven moorland and coastal walks the author not only tells his readers when to turn right, when left, and where to start and finish, but all sorts of interesting ancient and modern historical details about the country traversed.

Obtainable from all Booksellers.

LONDON: A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE E.C.4.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.
Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.
Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.SC., F.R.S.E.; EVELYN V. BAXTER, F.Z.S. H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.SC., F.R.S.E.; ANDERSON FERGUSSON, F.R.E.S.; A. R. WATERSTON, B.SC.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
September, 1936.

505.42

OCT., 1936

No. 957
No. 730 of current Series

The NATURALIST

OCT 13 1936
NATIONAL MUSEUM

A MONTHLY ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

	PAGE
The Aquatic Vegetation of Malham Tarn—*W. A. Sledge, Ph.D.*	217-219
Notes on the Bird Population in Wensleydale (V.C.65). Summer 1936—*John F. Utley, B.Sc.*	219-220
Arachnida of the Whitby District—*H. Britten, F.R.H.S., and W. Falconer, F.R.E.S.*	221-227
Cumberland Diptera—*Jas. Murray*	227
From a Microscopist's Note Book—*W. Lawrence Schroeder, M.A.*	228-229
Brachyodus trichodes Fuernr. in Staffordshire—*T. H. B. Bedford*	229-230
Reviews and Book Notices	230
Records	231-233
Y.N.U. at Hackness	233
Yorkshire Naturalists at Pocklington	234-240
News from the Magazines	240

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

YORKSHIRE NATURALISTS' UNION

GEOLOGICAL SECTION

THE Annual Meeting of the Section will be held in the Geological Department, University of Leeds (5 Hillary Place) on Saturday, October 3rd, at 3 p.m.

H. C. VERSEY.

CONCHOLOGICAL SECTION

THE Annual Meeting to discuss the Report and nominate officers will be held in the Geological Department, Leeds University (Hillary Place), on Saturday, October 3rd, at 3-30 p.m.

Austwick, via Lancaster. CHRIS. A. CHEETHAM.

FRESHWATER BIOLOGY COMMITTEE

THE Annual Meeting to discuss the Report and nominate officers will be held in the Geological Department, Leeds University (Hillary Place), on Saturday, October 3rd, at 3-30 p.m.

Austwick, via Lancaster. CHRIS. A. CHEETHAM.

BOTANICAL SECTION

THE Annual Meeting will be held in the Botanical Department at Leeds University on Saturday, October 10th, at 3 p.m., when the Annual Report will be considered and nominations for the various offices and committees will be made.

Austwick, via Lancaster. CHRIS. A. CHEETHAM, *Hon. Secretary.*

VERTEBRATE SECTION

TWO MEETINGS will be held in the Library of the Church Institute, Albion Place, Leeds, on Saturday, October 17th, 1936, at 3-15 and 6-30 p.m.

At 3-15 p.m., to consider and pass (*a*) Sectional Reports for 1936 and to elect officers for 1937; (*b*) The General and Financial Reports of the Yorkshire Wild Birds and Eggs Protection Acts Committee for 1936, and to recommend this Committee for 1937; (*c*) The Reports of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee for 1936 and to recommend this Committee for 1937.

The following papers will be given:—

'Notes on the Dartford Warbler and on a Yorkshire Great Crested Grebe,' by R. Chislett, F.R.P.S., M.B.O.U. (still pictures).

'Bird Hunting with a Tramp,' by R. Woods (still pictures).

'Filming the Rook,' by G. R. Edwards (motion pictures).

Members and Associates are cordially invited to attend and to bring notes, specimens and lantern slides. Will Officers of Affiliated Societies kindly notify their members?

13 Chestnut Avenue, York. E. WILFRED TAYLOR, *Hon. Secretary.*

ENTOMOLOGICAL AND PLANT GALLS SECTIONS

Annual Meeting, Saturday, October 24th

THE Annual Meeting of the above Sections will be held on Saturday, October 24th, at the CHURCH INSTITUTE, ALBION PLACE, LEEDS, at 3 p.m. and 6 p.m. Members are invited to bring exhibits.

46 Gipton Wood Avenue, Leeds 8. W. D. HINCKS, *Hon. Secretary.*

THE AQUATIC VEGETATION OF MALHAM TARN

W. A. SLEDGE, Ph.D.

Botanists visiting Malham Tarn have invariably been dependent upon the collection of fragments of water plants washed up on the shore and there is no adequate account of its aquatic flora. Yet the number of species which have been recorded is sufficiently large to suggest that the flora is fairly rich and would well repay working from a boat. On September 14th, 1936, Dr. Pearsall and I having obtained the necessary permission made a thorough examination of the whole tarn. The submerged vegetation was systematically explored with a drag and plankton samples were procured with a tow net.

The tarn lies at an altitude of 1,250 ft. and is 153 acres in extent. The bottom shelves to a maximum depth of $13\frac{1}{2}$ ft. on the north and east sides at a distance of approximately 30 yards from the shore. An average depth of 10 ft. was recorded at the same distance from the southern shore. On the west side, in the bay opposite the entry of the inlet stream, the water is much shallower reaching a maximum depth of 6 ft. Stones and gravel are confined to a narrow belt a few yards in width along the north, east and south shores. Elsewhere the bottom consists of fine mud except on the south-western side, opposite Tarn Moss, where submerged blocks of peat occur. The mud effervesces with hydrochloric acid and hence contains free calcium carbonate. It is neutral or slightly alkaline in reaction yielding no nitrates. The soil from the middle of the lake at 13 ft. had a pH of 7·6 and in spite of its richness in calcium carbonate showed a deficiency of bases when tested with ammonium thiocyanate. It was a soil with strong reducing properties which would indicate that ammonia would be formed during decay and not nitrates.

Vegetation extends outwards to a depth of 10 ft. on the north side, 8-9 ft. on the south side, and 13 ft. on the east side. Much of the central and western part is devoid of bottom vegetation; elsewhere extensive areas are occupied by the species of *Chara* which has previously been referred to *C. fragilis*, but which appears to agree better with the description of the closely allied species or sub-species *C. delicatula*. *Potamogeton lucens* is locally dominant forming dense beds off the southern and eastern shores, whilst in shallower water along the southern shore is a third and well-marked zone consisting of *Chara aspera*. These three species form almost pure communities and whatever the total population of species may be there can be no question that they far outnumber in individuals all others and cover approximately half the total area from 4-5 ft. downwards. *Fontinalis*

OCT 12 1936

antipyretica is plentiful in the region round the inlet and some *Hypnum scorpioides* was found at a depth of 4 ft. A single specimen of *Potamogeton pusillus* intermixed with *Chara delicatula*, small quantities of *Myriophyllum spicatum* and in the shallow western bay, some mats of a submerged form of *Callitriche stagnalis* were the only other species brought up. Our failure to secure specimens of *Potamogeton alpinus* was surprising in view of the readiness with which this can usually be found amongst the tangle of plants cast up at the edge of the water. But we subsequently observed it growing close in to the shore near the boathouse and it is probable that it occurs mainly if not exclusively in shallow water close in to the shore. Only detached fragments of *P. perfoliatus* were seen. As this also can usually be found washed up earlier in the summer, its scarcity must be accounted for by its having already died down, though it is evidently much less plentiful than *P. lucens*. Neither *P. praelongus* nor *P. angustifolius* (*P. Zizii*) were seen. As the former has only three times been recorded from here and the latter only once (*Naturalist*, 1925, p. 278) it is clear that they must both occur in very small quantity. In the north-eastern corner *Littorella lacustris* grows on the gravel beach.

The plankton samples were examined by Dr. Pearsall, who has supplied the following account.

The phytoplankton consisted mainly of blue-green algæ and peridinians. The proportions of different types of algæ present were as follows : the figures indicating percentages :— Blue-green algæ 45, Peridinians 31, Green algæ 22, Diatoms 2. The blue-green algæ were *Anaboena lemmermanii* (20), *Microcystis flos-aquae* (23), *Oscillatoria tenuis* and *Aphanothece nidulans*, the numbers indicating the percentage present. The peridinians were *Ceratrium hirundinella* (22) and *Peridinium willei* (9). Included in the green algæ were *Botryococcus braunii* (10), *Tetraspora lacustris* (4), *Endorina elegans* (6). A somewhat damaged specimen of a *Volvox* was seen, possibly *V. aureus*. Desmids were very rare and a prolonged search revealed only *Staurastrum annatinum* and *S. furcigerum*.

It was too late to expect many diatoms, though they are probably abundant in spring and both *Asterionella gracillima* and *Fragilaria capucina* were frequently observed.

The principal interest of this collection is that it is a fairly typical phytoplankton from a well-developed calcareous lake, in that it contains large numbers of individuals of a few species, blue-green algæ and *Ceratrum* being predominant at this time of the year. This is exactly what one would anticipate from the surroundings and somewhat calcareous waters of the tarn. In view of the fact that this list confirms

the results from a small shore collection made in August some years ago, it is difficult to understand how W. and G. S. West (*Proc. Roy. Soc., B.* 81, 165) came to describe the plankton as a Desmid plankton from a collection made many years ago. It is possible that their collection was made under somewhat abnormal conditions. Such wide variations from the normal condition are occasionally observed —though not usually in lakes with well-defined vegetation and surroundings. The water of Malham Tarn (with 31-32 mg. of calcium per litre) is too calcareous to favour a desmid plankton. These plants are not usually common when the calcium content of the water exceeds 15 mg. per litre. Possibly an extreme variation of this factor may be possible under some conditions. No large changes in the numbers of habitations or in the surroundings have taken place in recent years, so that it is not probable that the tarn has developed in this period from a water with desmid plankton in summer to one with blue-green algæ. A change in a similar direction has taken place in certain Swiss lakes and in Windermere, but in both these cases, there have been large increases in local population and in resultant pollution of the lake waters. These factors have led to large increases in the blue-green algæ in the summer plankton. It seems, however, hardly possible to invoke such an explanation in the case of Malham Tarn. In fact, its submerged vegetation and plankton are so generally similar to those of Hawes Water, Silverdale (altitude 50 ft.) as to suggest that these lakes are both typical calcareous waters, despite their difference in altitude. Boycott points out the fact that of the mollusca in the tarn, *Limnæa stagnalis, Planorbis nautileus, Bithinea tentacula,* and *Pisidium amnicum* are unknown elsewhere at more than 1,000 ft. This peculiarity is probably correlated with the nature of the rooted vegetation, which is typical of a moderately calcareous water and shows no special features due to altitude except the bareness of the actual shore line.

NOTES ON THE BIRD POPULATION IN WENSLEYDALE, (V.C. 65). SUMMER, 1936.

JOHN F. UTLEY, B.Sc.

THE year has not been one of the best for observations on bird life, and the weather conditions have also had an effect on the bird population.

The spring was generally inclement, summer days have been few and erratic, and there has been little to encourage many of our migrants to revisit their summer quarters.

Taking first birds generally resident, the large number of

Chaffinches has been most noticeable. There seemed to be a big influx of ' foreign ' birds about the end of April, and not in any year of observation have I found so many Chaffinch nests. With Starlings it was the reverse. We had a large winter population, but a considerable number of these left in early spring and their number was not fully replaced. Song-thrushes were almost absent from the north-west district during winter, but reappeared in force in spring. Hedge-accentors have not been quite up to standard, nor have there been quite as many Greenfinches. Lesser-redpolls have been fairly common, and other residents much as usual.

Regarding summer migrants, a few of the birds mentioned may not be regarded as migrants in some districts, but they certainly leave our bleak north-west moors for the winter.

The Willow-warbler has been as ubiquitous as ever, but Chiffchaffs were not seen in many places, and Wood-warblers were very locally distributed. Whitethroats have been observed in most parts of the district. Few Sedge-warblers have been noted, and no Reed or Grasshopper-warblers came to my knowledge within the district. The Spotted-flycatcher has been much short of its usual numbers, and Blackcaps were found but occasionally. Redshanks did not arrive until very late and then in very small numbers. The case of the Wheatear has been peculiar. This bird scarcely made an appearance in the district till June, apart from a few scattered birds, and there was never at any time anything like the usual number, and considerable portions of V.C. 65 can be classed as typical Wheatear country, as of past years my own observations of can show. A few odd pairs of Grey-wagtails were seen, but the Pied and Yellow species have been here in good number. Tree Pipits have been fairly common, while Ring-ouzels have been down in numbers. Swifts and Swallows appeared much as usual, but House-martins have not been plentiful. The Cuckoo has not been so common this year.

The most noticeable absentee has been the Corncrake. On but two occasions did I hear this bird, once at Haygarth, near Cauldron Snout, and once at Wensley. During normal years, near the latter locality, scarce a summer evening would pass without the note of the Corncrake being heard. I have made many enquiries throughout the district, but the answer was always the same ; it had not been heard.

Perhaps the most outstanding features of bird life within V.C. 65 which have come to my notice have been the successful rearing of a family of Great Crested-grebe on Lake Semmerwater, and a similar raising by a pair of Pochard on some marshy ground on Leyburn Moor.

Comparative reports from other districts would be of interest.

ARACHNIDA OF THE WHITBY DISTRICT

H. BRITTEN, F.R.H.S., AND W. FALCONER, F.R.E.S.

THE first-named writer collected the greater part of the arachnids dealt with in the present paper in the course of his investigation of the fauna of the district within a 12-mile radius of Whitby (1935-6). His captures were all submitted to and named by Dr. A. Randell Jackson, to whom his best thanks are due. Included in them were two very noteworthy additions to the county list, *Chiracanthium virescens* Sund. and *Tetragnatha obtusa* C. L. Koch; *Cyclosa conica* Pall. and a harvestman, *Liobunum blackwallii* Meade, new to V.C.62. To the above collection others have been added to bring the number of arachnids in the area up to date: (1) a few collected by the second writer in June, 1932; in the list, placed after the initials, W.F.; and (2) several already reported in the *Spiders of Yorkshire*[1] (S.Y. in the list), among them the rare *Zelotes apricorum* L. Koch, *Metopobactrus prominulus* Cb., *Entelecara acuminata* Wid., *Cornicularia vigilax* Cb., *Porrhomma microphthalmum* Cb., and *Sintula cornigera* Bl. The abbreviations are the usual ones: w., widespread; v.r., very rare; r., rare; u., uncommon; f., frequent; v.c., very common; c., common; l., local; and refer to the county or general distribution of the species, but specific stations to V.C. 62. The total number recorded is 153 spiders, 12 harvestmen, and 1 false scorpion.

SPIDERS.

Amaurobius ferox Walck. Whitby, ♀, 29/10/35; ♂, 8/5/36; u. in the north. Previously Scarborough and Cayton Bay, 3 ♀s.

A. similis Bl. Whitby, 29/10/35 to 23/5/36, 4 ♂s, 2 ♀s; v.c., w.

A. fenestralis Stroem. Whitby, ♀s, 22/3/36; Mulgrave Woods, ♀, 11/3/36; Sleights, 31/5/36; W.F., East Row Beck and Arncliffe Woods; v.c., w.

Dictyna arundinacea Linn. Falling Foss, 2 ♂s, ♀, 23/5/36; Wragby Wood, ♂, 3 ♀s, 6/6/36; Mulgrave Woods, 2 ♂s, 24/6/36; c., w.

D. latens Fabr. Sleights, 2 ♂s, 31/5/36; Beckhole, ♂, 5/7/36; Runswick Bay, ♂, 2/8/36; W.F., East Row Beck, both sexes; S.Y., Staithes, on sea banks; c. on furze in many places.

Dysdera crocota C. L. Koch. Whitby, ♂, 3 ♀s, 29/10/35, 24/11/35, 12/3/36, ♀, 17/8/36; u. Previously Scarborough, Middlesbrough, and Yarm.

Harpactes hombergii Scop. Falling Foss, ♀, 23/5/36; c., w. Previously Whitby, Cock Mill, Boulby, and Kilton.

Segestria senoculata Linn. S.Y., Beast undercliff, Staintondale; w., c.

Drassodes lapidosus Walck. Whitby, Little Beck, Deep Grove, Skelder, Runswick Bay, both sexes; ♀, Ellerbeck; v.c., w.

Zelotes (*Prosthesima*) *apricorum* L. Koch. S.Y., Beast undercliff, Staintondale, 2 ad., 2 imm. ♀s, 1 ad., 2 imm. ♂s; v.r. in Yorkshire.

Scotophæus blackwallii Thor. Whitby, ♀, 13/3/36. Previously from four Yorkshire localities, one only in V.C.62, Marske-on-Sea.

---

[1] *The Naturalist*, serially from 1918 to December, 1922.

Theridion sisyphium Clerck. Beckhole, ♂, 5/7/36 ; Sleights, imm., 17/5/36 ; Wragby Wood, ♀, 6/6/36 ; Mulgrave Woods, ♂, 24/6/36 ; Skelder, ♂, 27/6/36 ; v.c., w.

T. denticulatum Walck. Whitby, 2 ♀s, 1/10/35 ; Runswick, ♂, 25/7/36 ; w., but records few in V.C.62.

T. vittatum C. L. Koch. Beckhole, ♀, 5/7/36. Previously Forge Valley, ♂ ; u. elsewhere in Yorkshire.

T. simile C. L. Koch. Wragby Wood, ♂, 6/6/36. Only other Yorkshire record, Goathland, 2 ♀s.

T. tepidariorum C. L. Koch. Whitby, 4 ♀s, 29/10/35, a planthouse spider, probably w. in old greenhouses.

T. pallens Bl. Beckhole, ♂, 2/5/36, ♂, 1/6/36 ; Falling Foss, ♂, 22/5/36 ; Sleights, 4 ♂s, 17/5/36, ♂ 31/5/36 ; c., w. The tiny females may be found not uncommonly with their ' spiky ' egg sacs much larger than themselves on the under surface of tree leaves in June and July.

T. ovatum Clerck. Wragby Wood, imm., 6/6/36 ; Mulgrave Woods, 2 ♂s, ♀s 26/6/36, 3/8/36 ; Ellerbeck, ♀, 9/8/36 ; v.c., w. ; low vegetation and bushes with two colour varieties.

T. varians Hahn. S.Y., Egton, w.

Pholcomma gibbum Westr. Whitby, ♀, 29/10/35 ; W.F., Arncliffe Woods ; w., c. in some places.

Robertus lividus Bl. Whitby, 4 ♂s, 5 ♀s, –/11/35 ; Skelder, ♂, 3 ♀s, 20/3/36, ♂, 27/5/36 ; v.c., w.

Maso sundevallii Westr. W.F., Arncliffe Woods, ♂, 3 ♀s ; w., c. in many places.

Hypselistes jacksonii Cb. Ellerbeck, imm. ♀, 9/8/36. One other county record, Eston Moor, ' in great abundance in one particular spot.'

Peponocranium ludicrum Cb. Beckhole, ♂, 2/5/36 ; S.Y., Goathland, Ravenscar ; c., w.

Ceratinella brevis Wid. Whitby, ♂, 8/12/35 ; Skelder, ♂, 22/3/36 ; Sleights, ♂, 17/5/36 ; S.Y., Ravenscar ; w., but not in any quantity.

C. brevipes Westr. S.Y., Goathland ; c., w.

Lophocarenum nemorale Bl. S.Y., Beast undercliff, Staintondale ; w., but not c.

Cnephalocotes obscurus Bl. Sleights, 2 ♂s, 31/5/36 ; c., w., but Eston, V.C.62, ' uncommon.'

Silometopus elegans Cb. Sleights, ♂, 17/5/36 ; u. Rare in V.C.62, Redcar, Eston Moor, 1 ♂, Ringingkeld Bog, ♂, 2 ♀s.

Metopobactrus prominulus Cb. S.Y., Staithes ; w., but u.

Pocadicnemis pumila Bl. Sleights, 2 ♂s, 31/5/36 ; usually c.

Tiso vagans Bl. Whitby, ♂, 24/12/35 ; w.

Diplocephalus cristatus Bl. S.Y., V.C.62 ; v.c., w.

Plæsiocrærus latifrons Cb. Whitby, 2♀s, 24/11/35. Previously Wilton Wood and Cayton Lane ; c. in V.C.61, 63, 64.

P. fuscipes Bl. Mulgrave Woods, ♂, 11/4/36 ; Beckhole, ♀, 2/5/36 ; c., w.

P. picinus Bl. Sleights, ♂, 31/5/36 ; W.F., Arncliffe Woods, ♀ ; w. Previously Scarborough and Saltburn districts.

Streptosphænus permixtus Cb. Sleights, ♂, 6/10/35. Previously Londsdale, Farndale, Eston Moor. Elsewhere w. in moist situations.

Colobocyba pallens Cb. Skelder, 8 ♂s, 5 ♀s, –/3/36 ; w. and in some localities plentiful.

Aulacocyba subitanea Cb. Whitby, ♀, 13/3/36. Previously Redcar. Probably c. when suitable habitats are explored, refuse in barns and stables.

Dicymbium tibiale Bl. Whitby, ♂, 24/11/36. Several other V.C.62 stations.

Savignia frontata Bl. Whitby, ♂, 8/12/36 ; Skelder, 20/3/36 ; c., w.

Trachynotus nudipalpis Westr. Skelder, ♀, 20/3/36 ; Sleights, ♀, 31/5/36 ; w. Cleveland, ' every locality visited.'

Walckenæra acuminata Bl. Sleights, ♂, 6/10/35 ; Whitby, ♂, ♀, 16/11/35 ; ♀, 8/12/35 ; c., w.

Cornicularia cuspidata Bl. Whitby, ♂, 16/11/35, 2 ♂s, ♀, 22/3/36 ; Little Beck, ♀, 19/4/36. Damp places, many stations.

C. vigilax Bl. S.Y., Hayburn Wyke, ♀ ; r., but commoner locally.

Entelecara acuminata Wid. Beckhole, ♂, 5/7/36 ; r. Previously Hinderwell, several females.

E. erythropus Westr. S.Y., Boulby, Ravenscar ; w., but not in quantity.

Gonatium rubens Bl. Whitby, Mulgrave Woods, Sleights, several females ; Ellerbeck, ♂ ; v.c.

G. rubellum Bl. Whitby, ♀, 22/3/36 ; Beckhole, ♀, 1/6/36, 5 ♂s, ♀ 25/8/36 ;Skelder, ♀, 20/3/36 ; Ellerbeck, ♂, 9/8/36 ; S.Y., Robin Hood's Bay, Hayburn Wyke. Much less common than the last.

Hypomma cornutum Bl. Sleights, ♀, 17/5/36 ; w., but Eston, V.C.62, ' not common.'

H. bituberculatum Wid. Whitby, ♀, 17/8/36 ; v.c., w.

Dismodicus bifrons Bl. Beckhole, ♂, 3/5/36 ; c., w.

Blaniargus herbigrada Bl. Sleights, ♀, 31/5/36. Several other stations in V.C.62.

Erigone atra Bl. Whitby, ♂, 1/10/35 ; v.c., w.

E. dentipalpis Wid. Ellerbeck, ♀, 9/8/36 ; v.c., w.

Gongylidium rufipes Linn. Sleights, 3 ♂s, 2♀s, 6/10/35 ; Mulgrave Woods, ♀, 11/4/36 ; Beckhole, 2 ♂s, 5/7/36 ; W.F., East Row Beck, many ♀s ; w. and in places common.

Œdothorax tuberosus Bl. Sleights, 2♂s, 6/10/35 ; Beckhole, ♂, 2/5/36. Moist ground, Cleveland, ' every locality visited.'

Œ. retusus Westr. Raithwaite, ♂, 25/1/36 ; W.F., Runswick Bay, several females ; S.Y., Goathland ; w., c.

Œ. fuscus Bl. Whitby, ♀, 22/3/36 ; Raithwaite, 3 ♀s, 21/3/36 ; W.F., Runswick Bay, ♀s ; v.c., w.

Œ. agrestis Bl. S.Y., Goathland ; w.

Porrhomma pygmæum Bl. Beckhole, ♂, 2/5/36 ; w. ; several V.C.62 stations.

P. microphthalmum Cb. Sleights, ♀, 17/5/36. Scarce in Yorkshire ; two other V.C.62 records.

Sintula cornigera Bl. S.Y., Hayburn Wyke, ♀ ; r., three other V.C.62 stations.

Hillhousia misera Cb. Sleights, ♀, 6/10/35 ; r., but locally plentiful.

Hilaira excisa Cb. S.Y., Hayburn Wyke ; w. in damp situations, but not in quantity.

Micronetа viaria Bl. Mulgrave Woods, ♂, 3 ♀s, 11/4/36 ; w., four other V.C.62 stations.

Agyneta conigera Cb. W.F., East Row Beck, ♂, ♀ ; S.Y., Hayburn Wyke, ♀ ; Boulby, ♀ ; w., and fairly c.

Meioneta rurestris C. L. Koch. Whitby, ♂, 24/11/35 ; Mulgrave Woods, ♂, ♀, 3/8/36 ; ♂, ♀, Beckhole, 2/5/36 ; c., w.

M. gulosus Koch. S.Y., Ravenscar ; a northern mountain form.

Aprolagus saxatilis Bl. Whitby, ♀, 16/11/35 ; S.Y., Goathland ; w. usually c.

Centromerinus bicolor Bl. Whitby, 2 ♂s, 2 ♀s, –/11/35, –/12/35 ; Sleights, ♂, 6/10/35 ; c., w.

Centromerus dilutus Cb. Sleights, ♀, 17/5/36 ; w., c. in many places.

C. prudens Cb. S.Y., Ravenscar ; inhabits chiefly hilly districts in the north.

Oreonetides abnormis Bl. W.F., Arncliffe Woods, ♀ ; S.Y., Beast undercliff ; c. on all the Cleveland moors.

Macrargus rufus Wid. Sleights, ♂, 6/10/35 ; S.Y., Ravenscar ; usually c. amongst fallen leaves in woods in the north of England.

Tapinopa longidens Wid. Sleights, ♀, 6/10/35 ; f.

Drapetisca socialis Sund. Mulgrave Woods, ♀, 3/8/36 ; S.Y. Hayburn Wyke. Protectively coloured on tree trunks ; w.

Bolyphantes luteolus Bl. Whitby, 2 ♀s, –/11/35, –/12/35 ; c., w. A northern spider.

Leptyphantes alacris Bl. W.F., Arncliffe Woods, both sexes ; S.Y., Falling Foss. More elevated portions of county ; c., w. ; rarer elsewhere.

L. minutus Bl. S.Y., Falling Foss ; c., w.

L. leprosus Ohl. Whitby, 6 ♂s, 2 ♀s, October to December, 1935, 3 ♀s, 17/8/36 ; Mulgrave Woods, ♀, 23/11/35 ; Raithwaite, ♂, 25/1/36 ; c., w. ; Whitby, ♀, 13/3/36 ; colour form with well annulated legs, scarce.

L. obscurus Bl. Beckhole, ♂, 1/6/36, 2 ♂s, 5/7/36 ; Mulgrave Woods, ♂, 24/6/36 ; S.Y., Goathland ; Hayburn Wyke, both sexes ; c., w.

L. cristatus Menge. Whitby, 4 ♂s, 8/12/35, ♂, 22/3/36 ; S.Y., Hayburn Wyke ; w., but not c.

L. zimmermannii Berth. Sleights, 3 ♂s, ♀, 6/10/35 ; Whitby, 2 ♀s, 24/11/35 ; Mulgrave Woods, 2 ♂s, 24/6/36 ; Beckhole, 2 ♂s, ♀, 5/7/36, 2 ♂s, 2 ♀s, 23/8/36 ; v.c., w.

L. tenuis Bl. Whitby, 8 ♂s, 4 ♀s, October 1935 to March, 1936 ; MulgraveWoods, 23/11/35 ; Littlebeck, 19/4/36 ; w., v.c. ; W.F., Arncliffe Woods, ♂, ♀.

L. tenebricola Wid. Sleights, 2 ♂s, 31/5/36 ; W.F., Arncliffe Woods, ♂, u. Two other V.C.62 stations.

L. ericæ Bl. Whitby, 2 ♂s, 8/12/35 ; Mulgrave Woods, ♂, ♀, 23/11/35 ; Littlebeck, ♂, 19/4/36 ; c., w.

Poeciloneta variegata Bl. Whitby, ♂, 2 ♀s, 8/12/35 ; Sandsend, ♂, 26/4/36 ; Beckhole, ♂, 1/6/36 ; w. in varying quantity.

Stemonyphantes lineata Linn. S.Y. V.C.62, v.c., w.

Labulla thoracica Wid. S.Y., Egton, Falling Foss, Goathland, Hayburn Wyke ; w. and fairly c. ; W.F., Arncliffe Woods, ♀.

Mengea scopigera Grube. S.Y., Goathland, ♀ ; Ravenscar, ♂ ; l. Cleveland, ' fairly plentiful everywhere.'

Linyphia triangularis Clerck. Sleights, 2 ♀s, 6/10/35 ; Mulgrave Woods, ♂, ♀, 3/8/36 ; Beckhole, 2 ♂s, 2 ♀s, 23/8/36 ; w., v.c.

L. montana Clerck. Beckhole, 3 ♀s, 1/6/36 ; usually c., w., but scarce in some places.

L. peltata Wid. Mulgrave Woods, Wragby Wood, Beckhole, Sleights, Falling Foss, many ♂s and ♀s, November, 1935, to August, 1936 ; W.F., Arncliffe Woods, both sexes ; w., v.c.

L. clathrata Sund. Mulgrave Woods, 1 ♂, 2 ♀s, –/11/35 ; Whitby, 6 ♂s, 4 ♀s, November, 1935, to March, 1936 ; Raithwaite, ♂, 25/1/36 ; W.F., Arncliffe Woods, ♂, ♀ ; v.c., w.

L. pusilla Sund. Beckhole, 2 ♂s, 2/5/36 ; Deep Grove, ♂, 1/6/36 ; Mulgrave Woods, 2 ♀s, 24/6/36 ; Ellerbeck, ♀, 9/8/36 ; S.Y., Hayburn Wyke ; w., but not in quantity.

L. hortensis Sund. Whitby, ♀, 8/5/36 ; Beckhole, ♀, 1/6/36, ♀, 5/7/36 ; Deep Grove, ♂, 2 ♀s, 30/6/36 ; Skelder, ♀ ; S.Y., Hayburn Wyke ; c., w.

L. insignis Bl. Mulgrave Woods, 2 ♂s, 2 ♀s, 3/8/36 ; w., c.

Stylophora (*Bathyphantes*) *concolor* Wid. Whitby, ♂, ♀, 29/10/35, 2 ♀s, 24/11/35 ; Raithwaite, ♀, 25/1/36 ; w., c.

S. nigrinus West. Mulgrave Woods, 2 ♀s, 23/11/35, 2 ♂s, 1 ♀, 11/4/36 ; Whitby, 4 ♂s, 3 ♀s, 22/3/36, 3 ♀s, 8/12/35 ; Raithwaite, ♂, 25/1/36 ; Sleights, 2 ♀s, 17/5/36 ; w., c.

S. pullatus Cb. Sleights, ♀, 17/5/36 ; u. Previously Eston and Great Ayton Moors.

Bathyphantes gracilis Bl. Whitby, 2 ♀s, 8/12/35, ♂, 22/5/36, ♀, 17/8/36 ; Mulgrave Woods, 11/4/36 ; w., c.

Pachygnatha clerckii Sund. Sleights, ♀, 6/10/35 ; Whitby, ♂, 2 ♀s, 17/8/36 ; w., c. in damp situations.

P. degeerii Sund. Whitby, 2 ♂s, 3 ♀s, 16/11/35, 3 ♀s, 8/12/35 ; Beckhole, ♀, 2/5/36 ; Ellerbeck, 9/8/36 ; W.F., Arncliffe Woods ; w., c.

Tetragnatha extensa Linn. Wragby Wood, 2 ♀s, 6/6/36 ; Ellerbeck, imm., 9/8/36 ; w. One other V.C.62 locality, Harwood Dale. Commoner than these records suggest.

T. montana Sim (*solandrii* Scop.). Beckhole, 5 ♂s, 2 ♀s, 5/7/36, 2 ♀s, 1/6/36 ; w., c. in many areas.

T. obtusa C. L. Koch. Mulgrave Woods, ♀, 24/6/36 ; Beckhole, ♀, 5/7/36. New to the county, a south of England spider.

Meta merianæ Scop. Wragby Wood, ♀, 6/6/36 ; Beckhole, imm. ♀, 23/8/36 ; W.F., Arncliffe Woods ; w., c.

M. segmentata Clerck. The commonest British spider, abundant everywhere : forma *mengii* Thor., the smaller and darker spring brood, Sleights, Mulgrave Woods, Beckhole, Deep Grove, Runswick, both sexes ; v.c., May to July, 1936.

Nesticus cellulanus Clerck. S.Y., Goathland ; w., commoner in some places than in others.

Zygiella atrica C. Koch. Sleights, 3 ♂s, 6/10/35 ; Whitby, ♂, 20/10/35, ♀, 24/11/35 ; v.c., w., usually on vegetation.

Z. x-notata Clerck. Whitby, 3 ♂s, 6 ♀s, –/10/35, –/11/35 ; Raithwaite, ♀, 25/1/36 ; Runswick, ♂, 2/8/36 ; v.c., w. ; angles of buildings and railings.

Araneus diadematus Clerck. Whitby, ♀, 6/10/35 ; Falling Foss, ♀, 23/5/36 ; Runswick, 2 ♂s, 27/7/36 ; Mulgrave Woods, ♂, 2 ♀s, 3/8/36 ; Beckhole, ♂, 2 ♀s, 23/8/36 ; w., c.

A. quadratus Clerck. Falling Foss, ♀, 23/5/36 ; Ellerbeck, ♂, 2 ♀s and imm. ; Ellerbeck, 9/8/36 ; w. somewhat l. Whitby, sparingly on the moors, S.Y.

A. umbraticus Clerck. Falling Foss, 2 ♂s, 23/5/36 ; Wragby Wood, 2 ♀s, 6/6/36 ; S.Y., Beast undercliff ; w., several V.C.62 localities.

A. cucurbitinus Clerck. Beckhole, ♂, 2/5/36, ♀, 1/6/36 ; Mulgrave Woods, ♂, ♀, 24/6/36 ; S.Y., Hayburn Wyke ; c., w.

Cyclosa conica Pall. Beckhole, melanic ♂, 1/6/36, ♂, 5/7/36. New to V.C.62 ; u. Three other Yorkshire localities.

Ero furcata Vill. Whitby, ♂, 22/3/36 ; S.Y., Ravenscar ; Hayburn Wyke ; w., occurring sparingly.

E. cambridgii Kulez. Mulgrave Woods, ♀, 11/4/36. Previous Yorkshire records, Marske-on-Sea, 3 ♀s ; Roos bog (V.C.61), ♂.

Oxyptila trux Bl. Skelder, ♂, 27/6/36 ; S.Y., Beast undercliff, Staintondale, Hayburn Wyke ; c., w.

Xysticus cristatus Clerck. Whitby, 2 ♀s, –/11/35 ; Sandsend, ♂, 26/4/36 ; Deep Grove, ♂, ♀, 1/6/36 ; Mulgrave Woods, ♀, 24/6/36, 3 ♀s, 3/8/36 ; Ellerbeck, ♀, 9/8/36 ; Beckhole, ♂, ♀, 23/8/36 ; W.F., Runswick Bay, ♀s ; w., vc.

Philodromus aureolus Clerck. Mulgrave Woods, 11/4/36, ♀, 6/6/36, ♀, 3/8/36 ; Sleights, ♂, 31/5/36 ; Wragby Wood, 2 ♀s, 6/6/36 ; Deep Grove, 2 ♀s, 20/6/36 ; Beckhole, ♀, 5/2/36 ; w., v.c.

P. cespiticolis Walck. Whitby, 26/11/36 ; w., v.c. Simon now combines these two species as *P. aureolus* Clerck., the females are indistinguishable.

Anyphæna accentuata Walck. Mulgrave Woods, ♀, 24/6/36 ; Beckhole, ♀, 5/7/36, ♀, 23/8/36 ; S.Y., Hayburn Wyke ; w., but very few Yorkshire records.

Chiracanthium erraticum Walck. (*carnifex* Fabr.). Ellerbeck, 2 ♀s, 9/8/36 ; S.Y., Robin Hood's Bay ; Whitby Moors. Very few Yorkshire records.

C. virescens Sund (*lapidicolens* Sim.). Ellerbeck, ♀, 9/8/36 ; new to

Yorkshire ; w., but scarce both in the British Isles and on the Continent.

Clubiona reclusa Cb. Beckhole, ♀, 1/6/36 ; Wagby Wood, ♂, 6/6/36 ; W.F., Runswick Bay, both sexes ; w., v.c.

C. lutescens Westr. Beckhole, ♂, 5/7/36 ; w., c.

C. phragmitis C. Koch. (*holosericea* Deg.). S.Y., Beast undercliff ; w., usually c.

C. trivialis C. L. Koch. Ellerbeck, ♂, 9/8/36 ; S.Y., Goathland ; w., f.

C. compta C. L. Koch. Skelder, ♀, 22/3/36 ; S.Y., Falling Foss, Little Beck ; W.F., Runswick Bay, ♀ ; w., c.

C. diversa Cb. S.Y., Staintondale ; w., but not always in quantity.

Zora spinimana Sund. S.Y., Ravenscar, Hayburn Wyke ; w., usually c.

Micaria pulicaria Sund. Runswick, imm., 2/8/36 ; S.Y., near Whitby, Staintondale ; w., fairly c.

Tegenaria derhamii Scop. Whitby, ♀, –/10/35, 2 ♀s, –/5/36 ; Mulgrave Woods, ♂, 11/4/36 ; the common house spider ; everywhere.

Textrix denticulata Oliv. Sandsend, 26/4/36 ; Whitby, ♂, 8/5/36 ; S.Y., Boulby, Beast undercliff ; w., c.

Coelotes atropos Walck. Sleights, ♀, 6/10/35 ; Mulgrave Woods, ♂, 2 ♀s, 11/4/36 ; Sandsend, ♀, 26/4/36 ; Runswick, ♂, 2/8/36 ; w., v.c.

Cryphoeca silvicola C. L. Koch. Skelder, ♂, ♀, 20/3/36 ; Littlebeck, ♀, 19/4/36 ; S.Y., Falling Foss ; w., c. A northern spider.

Hahnia montana Bl. Skelder, ♀, 20/3/36 ; S.Y., Egton ; Ravenscar ; w., c.

Pisaura mirabilis Clerck. Sleights, ♀, 6/10/35 ; Littlebeck, 19/4/36 ; Mulgrave Woods, ♀, 3/8/36 ; S.Y., Robin Hood's Bay ; w., and usually c., but few other Yorkshire records.

Pirata hygrophilus Thor. S.Y., Goathland, ♀, somewhat local ; four other Yorkshire records.

P. piraticus Clerck. S.Y., w. and c. in wet places.

Trochosa terricola Thor. Mulgrave Woods, ♂, 11/4/36 ; Sandsend, ♀, 26/4/36 ; W.F., Runswick Bay, ♀ ; w., v.c.

Tarentula pulverulenta Clerck. Beckhole, 1/6/36 ; w., v.c.

Lycosa amentata Clerck. Sleights, ♂, 6/10/35 ; Whitby, ♀, 24/11/35, ♂, 6/12/35 ; Falling Foss, 2 ♀s, 23/5/36 ; Wragby Wood, ♀ ; Runswick, ♀, 2/8/36 ; w., v.c.

L. nigriceps Thor. Ellerbeck, 2 ♀ s,9/8/36 ; S.Y., Beast undercliff, Staintondale, Hayburn Wyke ; w., c.

L. lugubris Walck. S.Y., Falling Foss ; also V.C.62, Eston ; w., fairly c.

L. pullata Clerck. W.F., Runswick Bay, Arncliffe Woods, both sexes ; w., v.c.

L. tarsalis Thor. (*palustris* Linn.). Whitby, ♂, 8/5/36 ; Skelder, ♀, 27/6/36 ; S.Y., Ravenscar ; w., usually c.

L. herbigrada Bl. S.Y., Low Moor (Robin Hood's Bay), l.

Neon reticulatus Bl. S.Y., Hayburn Wyke ; w., c. in places.

Salticus scenicus Clerck. Whitby, ♀, 8/5/36 ; Sleights, ♀, 31/5/36 ; Deep Grove, ♀, 30/6/36 ; w., c.

Euophrys frontalis Walck. Sandsend, 2 ♀s, 26/4/36 ; w., usually c., but records few in V.Cs 62, 63, 64, 65.

HARVESTMEN.

Nemastoma lugubre Müll. Sleights, ♀, 6/10/35 ; Whitby, ♂, 3 ♀s, 24/11/35, ♂, 8/12/35 ; Mulgrave Woods, ♀, 21/11/35 ; W.F., Arncliffe Woods ; w., v.c.

N. chrysomelas Herm. W.F., Arncliffe Woods, several examples, H.Y.[1], Egton ; w., but infrequent.

[1] H.Y. 'The Harvestmen of Yorkshire,' *The Naturalist*, March to June, 1916.

Mitopus morio Fabr. W.F., Arncliffe Woods ; w., v.c.
Oligolophus agrestis Meade. Sleights, 2 ♂s, 2 ♀s, 6/10/35 ; Whitby, 2 ♀s, 8/12/35 ; Mulgrave Woods, ♀, 23/11/35 ; W.F., Arncliff Woods ; w., v.c.
O. tridens C. L. Koch. Whitby, ♂, 29/10/35, ♂, 8/12/35 ; S.Y., Falling Foss, Hayburn Wyke ; w., c. in many places.
Odiellus palpinalis Herbst. H.Y., Goathland, Beastundercliff, Staintondale ; u.
Lacinius ephippiatus C. L. Koch. H.Y., Falling Foss, Hayburn Wyke ; W.F., Arncliffe Woods ; w., v.c.
Phalangium opilio Linn. H.Y., Goathland, Egton, Hayburn Wyke, Staithes, Boulby ; w., v.c.
Opilio parietinum Degeer. Whitby, ♀, ♂, 16/11/35, ♂, 24/11/35. Common, Middlesbrough and Scarborough ; w., c.
Platybunus triangularis Herbst. By priority, Whitby, 8/12/35 ; W.F., Arncliffe Woods ; w., v.c.
Liobunum rotundum Latr. H.Y., Falling Foss, Hayburn Wyke, Boulby ; W.F., Arncliffe Woods, both sexes ; w., v.c.
L. blackwallii Meade. Sleights, ♀, 6/10/35. New to V.C.62. Three other Yorkshire records.

False Scorpion.

Obisium muscorum Leach. W.F., Arncliffe Woods, three examples. H.Y., numerous stations in the Cleveland, Scarborough, and Whitby districts ; w., v.c.

CUMBERLAND DIPTERA

Tabanus sudeticus Zell. ; while collecting mosses one hot day in July on the northern shore of Lake Wastwater, I saw this fine fly in considerable numbers sunning themselves on the rocks. It also occurs on the sandhills south of Seascale, where I took specimens on 7/7/1921. Two other flies from Seascale are *Sericomyia borealis* Fall. and *Volucella bombylans* L. The latter species was common in July, the vars. *bombylans* and *plumata* De G. occurring in about equal numbers. Frequenting the flowers of *Caltha* in May near Longtown, I caught several examples of *Syrphus cinctus* Fall., *Chilosia fraterna* Meig., and *Melanostoma scalare* Fab. In July last year I swept *Urophora solstitialis* L. from Thistles near "the Beck," a lonely farm-house near the Border. On Todhills moss in June I took *Palloptera trimaculana* Meig., *Dilophus albipennis* Meig., and *Chlorops speciosa* Meig. *Bibio laniger* Meig. is abundant about Longtown in May. One specimen of *Rhamphomyia erythrophthalma* Meig. occurred to me on Todhills moss on 19/8/32, and was kindly determined by Mr. J. E. Collin. This is an autumnal species. *Sympycnus annulipes* Meig. was swept from reeds on Todhills moss on 26/8/31. From a grassy bank near the above mentioned Beck farm, I swept in July *Hybos culiciformis* Fab., *Hilara chorica* Fall., *H. flavipes* Meig., *Chrysotus cilipes* Meig., *Lonchoptera lutea* Panz., *Elachyptera cornuta* Fall. *Centor nudipes* Leow and several other species already recorded from Cumberland.—Jas. Murray, Gretna.

1936 Oct. 1

FROM A MICROSCOPIST'S NOTE BOOK

W. LAWRENCE SCHROEDER, M.A.

For one hour I took measurements of the movements of *Actinophrys Sol* every five minutes; the average movement in that time was c. 145μ.

Examining an Isopod—a young *Asellus aquaticus*—I found on the ventral surface, a little below the mouth, a group of eight rotifers—*Callidina parasitica*, a commensal, not a parasite. The movement of the *Asellus* would bring the rotifers into contact with a wider world. Most of the rotifers were with young ; I brushed some off the Isopod and under the compressorium examined one. In compressing the creature I ruptured the parent and the young rotifer emerged. It seemed no worse for its forced entrance into the world, and straightway began to forage for food.

From time to time I have induced caddis-worms to build afresh, by gently ushering them forth from their cases, in the application to the hinder-end, of a bluntish pin. In the tank were various materials with which the case might be made. A larva, rudely ejected from its abode, made for some soft filamentous weed and took refuge therein. The new case was almost straightway begun ; in two days the case was finished. At the back end there was the soft fluffy weed, but little bits of stalk had been used for the greater part of the case. As the days went on the case became more substantial, with little bits of flint and brick which formed the basic material in the jar ; the soft weed was gradually discarded. When the larva pupated, it closed the ends of the case with small bits of flint.

Occasionally the case has been attached by the pupating creature—in one instance *Limnophilus extricatus*—either to the side of the jar or to a piece of *Elodea*—the Canadian Pond-weed.

Before the passion for tidiness possessed the keepers of the Temple Newsam ponds, it was possible to get interesting stuff from the waters. On one occasion we took a number of *Daphnia pulex* var. *obtusa*, which seemed covered with a sort of green slime, which turned out to be *Euglena variabilis* in quantity. They measured in length c. 24μ. and in breadth c. 10μ. ; the flagellum was about two-thirds the length of the body. In the fully-developed creatures there were six or seven parietal plate-like chromatophores. The *Euglenae* were simply attached to the cases of the water-flea. Rounded specimens were c. 14μ. in diameter. I placed some of them in a life-cell ; they preferred the vaseline edge, where they clustered and throve.

In the collection from the Temple Newsam pond were the leech, *Glossiphonia fusca* ; *Polycelis nigra*—one of the

Turbellaria—with eighteen eyes on each side and fourteen in front ; *Hydra fusca*, with buds ; *Lebertia taw-insignita*, one of the watermites ; *Notaspis*, one of the horny mites ; *Plumatella polymorpha*, a polyzoon ; and the Oligochaete, *Nais communis* budding, a late stage, for the eyes in the bud were quite clear. *Nitella* was taken with *Pisidium* snails, and also colonies of *Carchesium polypinum*, belonging to the *Vorticellidae*. One of the colonies was five-sixteenths of an inch across and the other one-eighth of an inch. When disturbed the zooids broke off from the branch of the stalk and went gaily swimming around as if rejoicing in their freedom. The length of the zooid was about 160μ. and the breadth about 70μ. ; the cilia were c. 36μ. long.

The movement of the free creatures was forward and revolving, and in a retraction the cilia were not always completely withdrawn. In the retracted state the zooids were about 126μ. in diameter.

Other finds there were—caddis worms with cases made of the fruits of one of the Potamogetons—probably *P. fluitans* ; a *Corixa Geoffroyi*, and, of course, the ubiquitous *Asellus aquaticus*.

And then the pond was " tidied " and the delicious mud with the accompanying vegetation cleared out—and the glory departed.

BRACHYODUS TRICHODES FUERNR. IN STAFFORDSHIRE

T. H. B. BEDFORD

No reference to the occurrence of *Brachyodus trichodes* in Staffordshire (V.C. 39) is contained in the *Census Catalogue of British Mosses*, 2nd Ed., 1926, or in the supplement to this volume which was published in 1935.

This moss has not yet been reported from Leicestershire and Rutlandshire (V.C. 55), Warwickshire (V.C. 38), Worcestershire (V.C. 37), and Shropshire (V.C. 40). These vice-counties are situated on the south and west borders of Staffordshire.

On the other hand, it has been recorded from Cheshire (V.C. 58) and Derbyshire (V.C. 57) which lie mainly on the north and east borders.

Owing to the kindness of Mr. Cheetham, of Austwick, the writer has become familiar with the habitat of this minute moss in Yorkshire. An attempt was made to discover it in Staffordshire.

A careful search was made along the Black Brook near Flash in North Staffordshire. This is a gritstone-sandstone region which is perhaps most remarkable, bryologically, for the abundance of Schistostega.

Brachyodus was found in three situations, at an elevation of approximately 800 feet. In each instance it was growing on moist sandstone on the left bank of the Black Brook. The colonies were pure and unmixed with other mosses. The plant was extremely fertile in all three situations and the characteristic fine longitudinal striations of the old capsules rendered identification in the field easy with the aid of a hand lens.

Specimens have been submitted to Mr. J. B. Duncan, who has kindly confirmed the identification.

The equally minute *Seligeria recurvata* B. & S. has not been recorded from Staffordshire. All attempts to discover it have so far been unsuccessful.

S. pusilla B. & S., however, is on the Staffordshire list of mosses and can be found in abundance on the limestone rocks at the upper end of Hall Dale near Stanshope.

REVIEWS AND BOOK NOTICES

Nature in Britain, an illustrated survey, introduced by **Henry Williamson,** with contributions by several authors, pp. vi + 250. Coloured frontispiece and 142 illustrations from photographs. Batsford, 5/-. Messrs. Batsford's books are always of very high standard, but here is something of quite outstanding merit. On glancing through the volume for the first time, one feels that the authors have had the run of the very best nature photographs and have selected the pick of the whole collection. Although the written contributions are of great interest, and are really informative, it is the photographs which make the book, yet Mr. Williamson who introduces his seven authors in deservedly flattering terms has nothing whatever to say about the illustrators. Many naturalists will be surprised to hear that Mr. Williamson appears to have no fear that the coming of the cheap motor car will produce ill-effects on the country. One gathers that he regards as æsthetic highbrows all the saddened critics of the swarms who litter the open spaces with broken bottles, empty tins, paper, fruit-skins, etc. A rapid Monday morning tour of any dozen beautiful corners of England would convince most people that cheap rapid transport has come a little too soon. Perhaps education of the right kind will, in time, improve matters, and we must be grateful to Mr. Williamson and his co-authors for their noteworthy contributions to the literature of this education. Miss Francis Pitt and Mr. Seton Gordon write on ' Animal and Bird Life ' respectively, Mr. E. G. Boulenger, of the London Zoo, has a chapter on ' Reptile and Amphibian Life,' and another on ' Pond and Stream Life.' Mr. Bushby, also of the Zoo, writes on ' Insects,' Mr. St. Barbe Baker on ' Trees and Shrubs,' and Mr. R. Gathorne-Hardy on ' Flowers, Plants and Fungi.' This book ought to be in every school and public library.

An Anthology of Modern Nature Writing, edited by **Henry Williamson,** pp. xvi + 276. Nelson, 3/6. Here are three dozen well-chosen prose extracts from authors ranging from Thomas Hardy, Hudson and Jefferies to S. P. B. Mais, Eric Taverner and H. M. Tomlinson. As the title suggests, the writings deal with life in the open-air, and this they certainly succeed in doing in the widest sense. Those who like to have samples of the work of good authors should be satisfied with Mr. Williamson's collection. Of necessity, there must be omissions, and no two people would put together the same anthology, but for its size and compactness, this small volume contains much fine writing of the kind which appeals to the true naturalist.

The Naturalist

RECORDS

MORCHELLA VULGARIS (PERS.) BOUD. IN YORKSHIRE AND (PROBABLY) DERBYSHIRE

As long ago as May 25th, 1932, two of my students (W. E. Montgomery and G. E. Wright) found a Morel on a sandy ash-heap by the edge of Ecclesall Wood, Sheffield. This was submitted to the late F. A. Mason, who replied, ' The Morel you send is *Morchella vulgaris* (Pers.) Boud. which I recorded for Nottingham in *The Naturalist*, August, 1930, p. 303, and it is the first record for Yorkshire. I obtained from your specimen a yellow-ochraceous spore-deposit overnight.' As this record, the third for Britain, has not yet been published I think it worth noting, especially as Mr. G. E. Wright has now found another specimen of what he thinks is the same species, by the roadside in Via Gellia (near Cromford), Derbyshire (May 31st, 1936).—J. M. Brown, Sheffield.

IMMIGRATION OF SILVER Y MOTHS IN THE FILEY DISTRICT

On Saturday, August 29th—incidentally, I should say, the warmest day we have had this year—there was to be seen hereabouts (Reighton) a most unusual invasion of Silver Y Moths (*Plusia gamma*). Gardens in Reighton, Hunmanby and Filey appeared alive with them, and quite a number of people, many of them normally unobservant, remarked on the fact. The wind was from the south, light to moderate, with a calm sea and visibility of, at first, 2 to 3 miles, becoming foggy later at sea. The previous day was calm with a blue sky.

No mass departure of this immigration seems to have been observed, the bulk of the moths appearing to spread gradually inland, while many are left here still.—T. Hyde-Parker.

YORKSHIRE RECORDS FOR CAREX ELONGATA L.

Only two stations stand on record for this rare species in the Floras of the three Ridings. The first Yorkshire and British record was made in 1803 at Aldwarke in the Don river basin. The other Yorkshire station is from ' boggy woods at Langwith, near York,' in V.C. 61. In both of these stations however the species was already extinct when the Floras of the respective Ridings were published. In June 1892, B. B. Le Tall, the Bootham schoolmaster, discovered this sedge at Askham Bog and sent specimens to the late Arthur Bennett, and it is on these specimens that the entry for V.C. 64 rests in the first supplement to *Topographical Botany*. A more recent record from the old canal bed near Cawthorne was based on a misidentification as was shown when I visited this locality with the finder some years ago.

I have repeatedly searched for this plant at Askham Bog

during the last ten years but so far as I am aware no botanist had ever met with it there again until I refound it in the ' far wood ' in June of this year. This part of the bog contains two distinct types of habitat, viz., a carr wood of birches with a dense undergrowth of *Phragmites*, and a wet oak-birch wood with fairly well-developed trees of *Q. Robur* and no tall reeds. It is in the latter habitat that the sedge occurs, under conditions closely similar to those in the only other station in which I have seen it growing at Roundsea Wood near Haverthwaite, in North Lancashire.—W. A. Sledge.

EQUISETUM VARIEGATUM SCHL. ON MALHAM MOOR

Whilst botanising with Mr. C. A. Cheetham on Malham Moor on July 8th, I found this species growing in boggy ground between the head of Gordale and Malham Tarn, and also in smaller quantity in the bog to the east of the Tarn where *Bartsia alpina* grows. In the latter station it was largely replaced by a depauperate form of *E. palustre*. The only station for this species given in Lees' *Flora of West Yorkshire* is Rev. W. Howson's record for Swarth Moor between Austwick and Horton-in-Ribblesdale. This record was published by Howson in 1850 and is quoted by Lees as the first record for the occurrence of the species in the West Riding. But Lees had overlooked a previous record by Jas. Backhouse, Jun., in an article entitled ' Notes of a Botanical Ramble in Yorkshire, etc., in the summer of 1844 ' (*Phytologist*, I, November, 1844, p. 1126). In this article Backhouse gives an account of a walk from Settle to Arncliffe with his father, John Tatham, Jun., of Settle, Silvanus Thompson of York, and G. S. Gibson of Saffron Walden, on July 11th, 1844, and *Equisetum variegatum* is included amongst the plants seen above the head of Gordale and towards Malham Tarn. Additional interest is given to Backhouse's account by his reference to ' a remarkable form of *Rhinanthus Crista-Galli* ' observed in the same place. This was the species now known as *R. monticola* (Stern.) which grows with *Bartsia alpina* and also in the bog further down towards Gordale where we refound *Equisetum variegatum*, nearly a century after its discovery there by Backhouse's party.—W. A. Sledge.

WAXWINGS IN THE WHITBY DISTRICT

During last winter the waxwing paid one of its irregular visits to the Whitby district. Towards the close of November nine were seen in a railway cutting about a mile from the town, where they may be almost invariably found in those seasons when they visit us. In December about the same number frequented this place, where there is an abundance of rose

hips, to which the birds are very partial, and about a dozen birds were observed about a mile away.

On January 19th three were busy feeding on the berries of the cotoneaster at the village of Sleights, about four miles inland from Whitby, where the birds generally turn up during the time they are in the district, as there they find the cotoneaster in abundance. Early in February about fifteen birds were seen in the railway cutting mentioned and four frequented the grounds of a gentleman's residence near the town. Odd birds and small parties were also met with in various parts of the district. None were seen after the beginning of April, and previous observation suggests they depart about that time. Although occurring inland, from the records it appears that the waxwing is most frequently noted near the coast, and that is certainly our experience, as the birds visiting us are usually met with within a few miles of the seaboard.—F. Snowdon.

A NOTE ON THE DIPPER [CINCLUS CINCLUS GULARIS (LATH.)]

The water-ouzel has several local names, but has been called the dipper in ornithological literature ever since the date of the first edition of Bewick's *Birds* and probably for some time before. This modern name owes its origin almost certainly to the curious curtsying and dipping movements of the bird, made when standing. All who know the dipper will also recall its habit of frequent blinking. This is quite easily observed as the fringes of white feathers above and below the eyes give quite a shutter-like effect to the operation. A point which appears to have escaped notice is that possibly every separate act of dipping is accompanied by a ' blink ' of the eyes. A short time ago Mr. V. S. Crapnell, of Halifax, very kindly allowed me to have copies of some of his beautiful cinematograph films of birds. One of the best of his moving pictures is one of the dipper. Much of the film is taken with a telephoto lens, and on the screen the bird appears to be within a foot ot two of the observer. Here the complete coincidence of ' dip ' and ' blink ' is very apparent and quite convincing. Since this interesting point was brought to light I have made a number of observations on dippers themselves and wherever the conditions have been favourable for close observation, the original observation has been confirmed. I regard this as a very definite ' score ' for cinematography.—W. R. Grist.

Y.N.U. AT HACKNESS.

A Correction

In my report (*The Naturalist*, September) on the Flowering Plants noted on this excursion, *Seamer Moor* should read in each case *Silpho Moor*.—W. A. Sledge.

YORKSHIRE NATURALISTS AT POCKLINGTON

AUGUST 1st to 3rd, 1936

The August meeting was arranged for the investigation of the Wold country near Pocklington, and for this purpose our Divisional Secretary for the South-east Vice County 61, Mr. C. W. Mason, selected the Millington and Kilnwick Percy areas, the first being open pasture land on the hill-sides of the steeply eroded valley, the flat bottom of which is just over 300 feet O.D. and the summits over 600 O.D. Kilnwick Percy is more cultivated land with extensive plantations and small areas of water. The Lias clay in the Millington valley bottom throws out several fine springs of water and these are now used as a water supply for the area. The fauna of the streams as will be seen in the following lists was small but interesting. On the steep hill-sides large patches of a coarse yellowish grass which proved to be *Brachypodium pinnatum* Beauv. were a distinct feature of the district with occasional Hawthorn scrub areas ; in some places the Rock-rose *Helianthemum vulgare* Gær. was fairly plentiful but flowers were not very evident, and the general impression gained was that the place was too well grazed for botanists and evidently the *Brachypodium* was not in favour with the grazing animals; here some of the interesting plants were found, among which were a fine show of the Clustered Bell flower, *Campanula glomerata* L., the Dropwort, *Spiræa filipendula* L. with few flowers though plenty of foliage, also Rest Harrow, *Ononis repens* L. and the Kidney Vetch, *Anthyllis vulneraria* L. Occasionally we saw masses of the fine Musk Thistle, *Carduus nutans* L. whilst in many wide stretches in the whole district the Rosebay Willowherb, *Epilobium angustifolium* L. gave the one great colour display. Other calciphilous plants noted were the Salad Burnet, *Poterium Sanguisorba* L., the Yellow Bedstraw, *Galium verum* L., the Crosswort, *G. cruciatum* With., the Hoary Plantain, *Plantago media* L., the Mountain Bedstraw, *Galium sylvestre* Poll., and the Purging Flax, *Linum catharticum* L.

In Millington Wood, attention was attracted to the Giant Bellflower, *Campanula latifolia* L., as the flowers were distinctly darker in shade than those of the Craven area. This point was noted in many other places in the district where the plant was seen. At Kilnwick Percy, above Warrendale Plantation, many of these plants were seen and here the Meadow Crane's-bill, *Geranium pratense* L. produced some plants with very pale flowers mingled with the normal blue-flowered plants. In the lake at the entrance, the Ivy-leaved Duckweed, *Lemna trisulca* L. was very plentiful

Allerthorpe Common was distinctly out of bounds on this occasion but a surreptitious visit in the rain gave the Petty Whin, *Genista anglica* L., the Trailing St. John's Wort, *Hypericum humifusum* L., and the Bird's Foot, *Ornithopus perpusillus* L. It was here the ornithologists were most fortunate and a Nightjar with young was seen, the latter being successfully photographed, the Green Woodpecker was also here ; at Millington several Wheatears were seen, and at Kilnwick Percy Bullfinches and Mallards were noted, while over the town, Swifts were in great plenty.

A little further away, but still on the edge of the Wolds, between Fangfoss and Full Sutton, the yellow-flowered Pepper-Saxifrage, *Silaus pratensis* Bess. was seen in plenty.

Fungi : (T. Petch) : Millington Wood was the typical mixed plantation of the Wold valleys, with an undergrowth of Umbelliferæ, *Stachys*, and nettles, and, as usual, it was not very productive. Allerthorpe Common furnished the characteristic species of Pine and Heather ground, while at Kilnwick Percy the spinneys and shrubberies near the

Hall offered a fungus flora of a different type. At Kilnwick Percy, a ' fairy ring ' of about twenty specimens of *Lycoperdon giganteum* was seen, and *Ustulina vulgaris* was observed in quantity on dead and dying Beech trees. *Daldinia concentrica* was noted at Allerthorpe on Birch trees killed by the fire of two years ago, from which a large area is just beginning to recover.

Entomogenous fungi were not common, though several species were found in small numbers. A wet season does not appear to be favourable to these fungi, probably because insects are less numerous than in drier seasons. Epidemics of fungus disease among insects appear to depend on density of population. Colonies of aphids were offensively healthy, and it was not until late on the Monday that the common *Entomophthora aphidis* was found on an aphis on Meadowsweet. The best ' find ' was *Empusa grylli*, on a Grasshopper, collected on Allerthorpe Common by Miss Anderson, the first recorded occurrence of this species in Great Britain.

The following is the list of species collected. Mr. W. G. Bramley has identified the Basidiomycetæ and general fungi, and Miss Wooff the Discomycetæ :

M=Millington. A=Allerthorpe. K=Kilnwick Percy.

Lycoperdon giganteum (Batsch.) Pers. K.
L. excipuliforme (Scop.) Fr. K.
Nidularia pisiformis (Roth.) Tul. On roots of gorse. A.
Cyathus striatus (Huds.) Pers. K.
Scleroderma aurantium Pers. A.
Sphaerobolus stellatus (Tode) Pers. M., A., K.

Lepiota rhacodes (Vitt.) Fr. A., K.
L. cristata (A. & S.) Fr. M.
Amanita phalloides (Vaill.) Fr. K.
A. rubescens (Pers.) Fr. A., K.
Amanitopsis fulva (Schaeff). W.G.Sm. A.
Tricholoma rutilans (Schaeff.) Fr. A., K.
T. glaucocanum Bres. K.
Collybia radicata (Rehl.) Berk. K.
C. velutipes (Curt.) Fr. K.
Laccaria laccata (Scop.) B. & Br. A.
Omphalia umbellifera (Linn.) Fr. A.
Mycena alcalina Fr. A., K.
M. sanguinolenta (A. & S.) Fr. A., K.
M. galopus (Pers.) Fr. A., K.
M. galopus var. *nigra* Fl. Dan. A.
M. discopus Lév. K.
Pleurotus applicatus (Batsch.) Berk. M.
Pluteus cervinus (Schaeff.) Fr. M., A., K.
Flammula carbonaria Fr. A.
Galera tenera (Schaeff.) Fr. A.
Inocybe rimosa (Pers.) Fr. A., K.
I. lacera Fr. A.
I. calamistrata Fr. K.
Cortinarius cinnamomeus (Linn.) Fr. A.
Psaliota xanthoderma Genev. K.
P. arvensis (Schaeff.) Fr. K.
Hypholoma fasciculare (Huds.) Fr. A., K.
H. velutinum (Pers.) Fr. K.
Psathyrella disseminata (Pers.) Fr. M., K.
Anellaria separata (Linn.) Karst. A., K.
Panaeolus campanulatus (Linn.) Fr. A.
Coprinus micaceus (Bull.) Fr. A., K.
C. plicatilis (Curt.) Fr. M.
Russula nigricans (Bull.) Fr. K.
R. ochroleuca (Pers.) Fr. A.
R. rubra (Krombh.) Bres. A.
R. fragilis (Pers.) Fr. A., K.
R. fragilis var. *nivea* (Pers.) Cke. A.
R. emetica (Schaeff.) Fr. K.
R. ochracea (A. & S.) Fr. K.
Lactarius turpis (Weinm.) Fr. A.
L. deliciosus (Linn.) Fr. A.
L. rufus (Scop.) Fr. A.
L. volemus Fr. K.
L. subdulcis (Pers.) Fr. A., K.
Marasmius hariolarum (DC.) Quél. K.
M. dryophilus (Bull.) Karst. A.
M. ramealis (Bull.) Fr. M., A.
Androsaceus rotula (Scop.) Pat. A., K.

Androsaceus androsaceus (Linn.) Pat. A.
Paxillus involutus (Batsch.) Fr. A., K.
Boletus badius Fr. A.
B. chrysenteron (Bull.) Fr. A., K.
B. subtomentosus (Linn) Fr. A., K.
B. scaber (Bull.) Fr. A.
Polyporus perennis (Linn.) Fr. A.
P. squamosus (Huds.) Fr. K.
P. sulphureus (Bull.) Fr. K.
P. betulinus (Bull.) Fr. A.
P. dryadeus (Pers.) Fr. K.
P. hispidus (Bull.) Fr. K.
P. versicolor (Linn.) Fr. A.
P. adustus (Willd.) Fr. K.
Fomes ferruginosus (Schrad.) Mass. M., K.
F. annosus Fr. M.
Irpex obliquus (Schrad.) Fr. A., K.
Phylacteria intybacea (Pers.) Pat. A.
Stereum rugosum (Pers.) Fr. A.
S. hirsutum (Willd.) Fr. A., K.
S. purpureum (Pers.) Fr. A.
Corticium laeve (Pers.) Quél. K.
Cyphella capua (Holms.) Fr. K.
Solenia anomala (Pers.) Fr. K.
Clavaria cinerea (Bull.) Fr. A., K.
Auricularia auricula-judæ (Linn.) Schroet. K.
Tremella mesenterica (Retz.) Fr. K.
Exidia glandulosa (Bull.) Fr. A., K.
Dacryomyces deliquescens (Bull.) Duby. A., K.
Calocera viscosa (Pers.) Fr. A., K.
C. stricta Fr. A.

Puccinia obtegens Tul. K.
P. violae DC. K.
P. centaureae DC. K.
P. baryi Wint. K.
P. perplexans Plowr. K.
P. coronata Cda. on *Aira flexuosa* K.
Puccinia poarum Niels. on *Tussilago* and *Poa* sp. K.
Triphragmium ulmariae Wint. K.
Pucciniastrum circeae Speg. K.
Urocystis anemones Schroet. on *Ranunculus repens*. K.

Plasmopara pusilla Schroet. on *Geranium pratense*. K.
Bremia lactucæ Regel on *Sonchus oleracea*. K.
Podosphaera oxycanthae de B. on *Spiræa ulmaria*. K.

Empusa grylli Fres. On a grasshopper. A.
E. papillata Thaxt. On flies (*Sciara* sp.). A.
Entomophthora aphidis Hoffm. K.
E. variabilis Thaxt. On flies. A.
Entomophthora dipterigena Thaxt. On flies. M., A.
E. muscivora Schroet. On fly. A.
E. sphærosperma Fres. On ichneumon. M.

Hyponectria buxi (Desm.) Sacc. K.
Pseudonectria rousseliana (Mont.) Seaver. K.
Nectria cinnabarina (Tode) Fr. K.
N. sinopica Fr. K.
N. aquifolii (Fr.) Berk. K.
N. sanguinea (Bolt.) Fr. M.
N. mammoidea Phil. & Plowr. A.
Hypocrea pulvinata Fckl. A.
Epichloë typhina (Pers.) Tul. K.
Lasiosphæria hispida (Tode) Fckl. M.
Leptospora ovina Fckl. K.
Xylaria hypoxylon (Linn.) Grev. M., K.
X. polymorpha (Pers.) Grev. K.
X. carpophila (Pers.) Fr. K.
Ustulina vulgaris Tul. K.
Daldinia concentrica (Bolt.) Ces. and de Not. A.

Rhytisma acerinum (Pers.) Fr. M., K.
Chlorosplenium aeruginosum (Oeder) de Not. K.
Helotium claroflavum Berk. A.
H. cyathoideum (Bull.) Karst.
Dasycypha subtilissima Sacc.
Mollisia cinerea Karst. A., K.
M. melaleuca Sacc.
Sphaerospora trechispora Sacc.
Lachnea hirta Gillet. A.
Humaria rutilans Sacc. A.
Rhizina inflata Quél. A.
Peziza badia Pers. A.
P. hemispherica Wigg. K.
Galactinia succosa Sacc. K.
Helvella sulcata Afz. A.

Phoma mirbelii (Fr.) Sacc. K.
Dinemasporium fimeti Plowr. & Phil. On rabbit dung. A.
Acremonium album Preuss. On *Stemonitis fusca*. A.
Sepedonium chrysospermum Bull. A., K.
Gliocladium penicillioides Cda. On *Physarum nutans* and *Stemonitis fusca*. K.
Fusarium roseum Lk. var. *Buxi* Sacc. K.
Stilbum erythrocephalum Ditm. A., K.
Volutella buxi (Cda.) Berk. K.

Ceratiomyxa fruticulosa Macbr. M., A., K.
Fuligo septica Gmel. A., K.
Badhamia panicea Rost. M.
Physarum cinereum Pers. K.
P. nutans Pers. M., A., K.
Reticularia lycoperdon Bull. A.
Stemonitis fusca Roth. A., K.
Comatricha nigra Schroet. A.
Lamproderma scintillans Morgan. M.
Cribraria vulgaris Schrad. A.
Tubifera ferruginosa Gmel. A.
Lycogala epidendrum Fr. A., K.
Trichia persimilis Karst. K.
Arcyria cinerea Pers. M.
A. incarnata Pers. A., K.
A. nutans Grev. K.
Perichaena corticalis Rost. M., K.

Entomology : (J. M. Brown) : Compared with the records made last August, at the Hovingham meeting, the results of this year's meeting at Pocklington are distinctly meagre. This may be due to the unsatisfactory season we have experienced for certain orders of insects, or perhaps to the less productive area. The limestone valleys at Millington, yielded very few Hemiptera, the park at Kilnwick Percy was distinctly richer, while the visit to the productive Allerthorpe Common was spoiled by the weather. On the other hand, while the number of species taken was comparatively small, quite a good percentage were interesting species, many being additions to the Vice County. Sweeping the Rosk-rose on the slopes at Millington yielded a single individual of *Bythoscopus microcephala*, first taken at Hovingham last year, but extended search failed to reveal additional specimens. *Megaloceraea linearis*, previously taken at Ruston Parva only, occurred at Millington and Kilnwick Percy. *Thamnotettix cruentatus*, so far only recorded once for the county, turned up on Allerthorpe Common; a new record for this well-worked area. *Deltocephalus socialis* was fairly plentiful on the Millington pastures. Miss D. Wooff handed me an immature individual of what has the appearance of being *Troilus luridus* F., a species, however, which has not yet been recorded as occurring in the county. Unfortunately it refused to feed, and died before transforming, and I am unable to determine it with certainty. Its occurrence would be an interesting addition to the fauna of the Common.

Several interesting Caddis flies were captured near the lake at Kilnwick Percy, and others were beaten from shelter in Scots Fir on Allerthorpe Common. Very few larvæ were seen in the spring streams at Millington, the only species noted being *Agapetus fuscipes*, an adult of which was also obtained. It is interesting to notice that these cold streams issuing from underground springs contained the stenothermous Planarians, *Planaria alpina* and *Polycelis cornuta* in plenty, but insect larvæ were not numerous.

An interesting Psocopteron, *Hyperetes guestfalicus*, was taken in some numbers from the trunk of a Willow by the lake at Kilnwick Percy, my only previous record being Winterburn.

Hemiptera

[In the following lists species which according to my notes appear to be additions to the Vice County 61 are marked with an asterisk*.]

The district did not prove very productive, but among those species

taken there were several of considerable interest. In the Millington district the following were obtained :

HETEROPTERA

Dolichonabis limbatus Dahlb.
Anthocoris nemorum L.
A. confusus Reut.
Trigonotylus ruficornis Fourc.
Megaloceræa linearis Fuessl., previously taken only at Ruston Parva.
Calocoris sexguttatus F.
C. norvegicus Gmel.
Stenotus binotatus F.
Lygus pabulinus L.
Brachyceraea epilobii Reut.
B. stachydis Reut.
Mecomma ambulans Fall.
Plagiognathus arbustorum F.

HOMOPTERA

Cercopis alni Fall.
Philaenus spumarius L.
f. *vittatus* Fab.
*f. *lateralis* L.
*f. *leucocephalus* Germ.
f. *populi* Fab.
**P. exclamationis* Thunb.
P. lineatus L.
**Bythoscopus microcephala* H.S., previously taken only at Hovingham, on Rock-rose.
B. lanio L., immature specimens only.
Deltocephalus thenii Edw.
D. socialis Flor.
D. pulicaris Fall.
Jassus mixtus Fab.
Eupteryx urticae Fab.
Psyllopsis fraxini L.

At Kilnwick Percy the following occurred :

HETEROPTERA

Anthocoris confusus Reut.
Megaloceræa linearis Fuessl.
Phytocoris ulmi L.
Calocoris norvegicus Gmel.
Stenotus binotatus F.
Plesiocoris rugicollis Fall.
Liocoris tripustulatus F.
Brachyceræa epilobii Reut.
**Campyloneura virgula* H.S.
Cyllocoris histrionicus L.
Orthotylus ochrotrichus D. & S.
Heterotoma meriopterum Scop., immature specimens only.
Atractotomus magnicornis Fall.
Psallus fallenii Reut.
P. alnicola D. & S.
Plagiognathus arbustorum F.

HOMOPTERA

Philaenus spumarius L.
Euacanthus interruptus L.
Bythoscopus lanio H.S., immature individuals only.
**Idiocerus adustus* H.S.
Euscelis lineolatus Brullé.
E. plebeius Fall.
Deltocephalus pulicaris Fall.
Jassus mixtus Fab.
Eupteryx atropunctatus Goeze.
Conomelus limbatus Fal.
Psylla buxi L.
Trioza urticæ L.

Allerthorpe Common has been so well worked by entomologists that few novelties could be expected, especially as the day was so wet, however, one or two good insects were obtained. The best were :

HETEROPTERA

Cymus claviculus Fall.
Acanthia saltatoria L.
Elasmucha griseus L., plentiful as adults and nymphs on Birch.
Phytocoris ulmi L.
**Stenodema laevigatum* L.
Notostira erratica L.
Camptozygum pinastri Fall.

Homoptera

Macropsis impura Boh., as usual on *Salix repens*.
Idiocerus lituratus Fall.
**Thamnotettix cruentatus* Panz., a species not previously taken on the Common.

Trichoptera

Caddis flies were not very plentiful during the visit, but a number that appear new to the Vice County were obtained. Those captured included :

Limnophilus auricula Curt. A., K.
L. griseus L. A.
L. sparsus Curt. A.
L. vittatus Fabr. A.
Leptocerus aterrimus Steph. K.
**Mystacides longicornis* L. K.
**Triaenodes bicolor* Curt. K.
**Molanna angustata* Curt. K.
**Holocentropus picicornis* Steph. K.
Agapetus fuscipes Curt. M.

Ephemeroptera

Very few Mayflies were seen :

Ephemerella ignita Poda. K., M.
**Cloeon dipterum* L. K.
**Baetis rhodani* Pict. M.

Psocoptera

The only Psocid of interest noted was **Hyperetes guestfalicus* Kolbe. found in numbers on the bark of the Willow, at Kilnwick Percy.

Neuroptera

A few Green Lacewing flies were seen, including :

Chrysopa flava Scop. A.
C. albolineata Kill. (*tenella* Schn.) A.
Chrysopa ventralis Curt. f. *prasina* Burm. A.
C. phyllochroma Wesm. M.

Plant Galls

Not much attention could be given to the plant galls, and only a few of interest were collected, including :

Eriophyes centaureæ Nal. on *Centaurea scabiosa* L.
E. macrorrhynchus Nal. on *Acer campestre* L., some trees being particularly badly infected.
Perrisia ulmariæ Bremi. on *Spiraea Filipendula* L.
Contarinia helianthemi Hdy. on *Helianthemum Chamaecistus* Mill.
Oligotrophus bursarius Br. on *Nepeta hederacea* Trev.

Diptera : (Chris. A. Cheetham) : Flies were not plentiful, but this was no doubt the result of the season and not the locality, and among the captures some flies of considerable interest were found. One of the commonest species generally swept from grass is *Opomyza germinationis* L., but here the rarer *O. florum* F. was taken with it. In Millington Wood an interesting woodland species of mosquito *Finlaya geniculata* Ol. and a large Robber fly new to Yorkshire, *Machimus atricapillus* Fln. were caught. Around the edge of the large lake at Kilnwick Percy an uncommon Dolichopod, *Pœcilobothrus nobilitatus* L. was plentiful, and *Corethra plumicornis* F. abundant, so that its larva, the Phantom larva, must be there in plenty. This year appears to have suited one of the Tachinids *Oliveria lateralis* F. (*Eriothrix rufomaculatus* Deg.), for it has been noted in plenty on the Umbellifers all over our county and those adjoining to the west and similarly the

Hover fly, *Syrphus balteatus* Deg. has been much more in evidence than other Syrphids.

The following is a list of those examined :

Corethra plumicornis F.
Finlaya geniculata Ol.
Ptychoptera albimana Fab.
Erioptera trivialis Mg.
Limnophila lineola Mg.
L. ochracea Mg.
L. discicollis Mg.
Pachyrrhina quadrifaria Mg.
P. listrio F.
Tipula couckei Tonn.
T. lateralis Mg.
T. pruinosa Wied.
Chrysopilus cristatus F.
Machimus atricapillus Fln.
Ramphomyia flava Fln.
Empis livida L.
Clinocera stagnalis Hal.
Tachydromia pallipes Fln.
T. pallidiventris Mg.
Dolichopus claviger Stann.
Pœcilobothrus nobilitatus L.
Argyra argentina Mg.
Xanthochlorus ornatus Hal.
Lonchoptera lutea Pz.
Platychirus immarginatus Ztt.
Melanostoma mellinum L.
Catabomba pyrastri L.
Syrphus ribesii L.
S. balteatus Deg.
S. cinctellus Ztt.
Eristalis pertinax Scop.
Syritta pipiens L.
Oliveria lateralis F.
Pollenia rudis F.
Hoplogaster mollicula Fln.
Phœomyia fuscipennis Mg.
Tetanocera elata F.
T. lævifrons Lw.
T. coryleti Scop.
Limnia unguicornis Scop.
L. obliterata F.
Psila fimentaria L.
P. nigromaculata Strobl.
Tephritis miliaria Schrk.
Loxocera albiseta Schrk.
Sapromyza præusta Fln.
Opomyza germinationis L.
O. florum F.
Lauxania ænea Mg.
Nemopoda cylindrica F.

NEWS FROM THE MAGAZINES.

The Entomologist for September contains ' Notes on Lepidoptera collected during 1935,' by S. Wakely ; ' Tobago and its Butterflies,' by W. G. Sheldon ; ' Notes on Braconidæ : XV—Microgasterinæ,' by C. Morley ; and numerous notes and observations, including several on Diptera.

The Entomologist's Monthly Magazine for September contains ' The Ethiopian species of the Fasciata group of the genus Bactria (=Promachus (Diptera, Asilidæ), by B. M. Hobby ; ' *Gastrallus lævigatus* Ol. (Col. Anobiidæ) a genus and species of Coleoptera new to Britain,' by H. Donisthorpe (Windsor Forest) ; ' New Species of Staphylinidæ (Col.) from Mauritius,' by M. Cameron ; ' Some more new or little-known British sawflies (Hymenoptera Symphyta),' by R. B. Benson ; ' Larvæ of a sawfly (*Tenthredopsis carbonaria* L.) feeding at night until early December in Sussex,' by R. B. Benson ; ' A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe ; and several short notes.

The Essex Naturalist, Vol. XXV, Part III, April-September, 1936, includes articles on ' Decoys on the Blackwater Estuary,' by J. W. Campbell ; ' The Occurrence of a Minute Fungus on a Free-swimming Alga in an Epping Forest Pond,' by D. J. Scourfield ; and ' Essex Bird Migration ' (first part), by W. E. Glegg.

The Scottish Naturalist, No. 221, September-October, contains the following : ' Isle of May Bird Observatory, Autumn Report ' ; ' The Fauna of Loch Bee,' by Dr. Edith Nicol ; ' The Egg-breaking Habit of the Kingfisher,' by R. L. Brown ; ' Additions to the Birds of West Lanarkshire and East Renfrewshire,' by Nicol Hopkins ; ' The Periodicity and Distribution of Algæ in Boghall Glen,' by Dr. E. W. Fenton.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post free 4/-.

The title of this book has been taken from "A Smuggler's Song" by Rudyard Kipling. Its setting is in the early days of the nineteenth century and faithfully depicts the characteristics of the Dales folk of that period, their wit, their capacity for driving a hard bargain, their love of the moors and sea, and their passionate devotion to smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Love and tragedy are intermingled, the whole being relieved by many humorous incidents, some of which take place at the market town which can be recognised as Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,
5 Farringdon Avenue, London, E.C.4.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, **6/-** *post free.* *Single Parts*, **1/3.**

All communications to be addressed to—
W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

NORTH WESTERN NATURALIST

A Scientific and Educational Journal (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

Edited by A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.
J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., Ph.D.
C. L. WALTON, M.Sc., Ph.D.
F. E. WEISS D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.Met.S.

Communications to :—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.
Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

THE BIRDS OF YORKSHIRE

By T. H. NELSON, M.B.O.U.,

With the co-operation of W. Eagle Clarke, F.R.S.E., and F. Boyes.

Two volumes. Demy 8vo, 901 pages, including over 200 Illustrations, beautifully printed in double tone ink, from Photographs by R. Fortune, F.Z.S., and other well-known naturalist Photographers, also three-colour plates, including specially designed title pages. Cloth boards, 17/6 net, post free, 18/3.

London : A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C. 4.
And at Hull.

BRITISH BIRDS

AN ILLUSTRATED MONTHLY MAGAZINE

Edited by H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., H.F.A.O.U. ;
Assisted by Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., F.Z.S., and N. F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

A complete current History of British Birds

ARTICLES NOTES
CORRESPONDENCE REVIEWS

Beautifully illustrated with Photographic and other Plates

ANNUAL SUBSCRIPTION, 20/- POST FREE; MONTHLY, 1/9 NET.
Specimen Plates with List of Contents post free.

London: H. F. & G. WITHERBY, 326, High Holborn.

Printed by A. Brown & Sons, Ltd., Perth Street West, Hull, and published by A. Brown & Sons, Ltd., at 5 Farringdon Avenue, in the City of London.
October, 1936.

OV., 1936

No. 958
No. 731 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

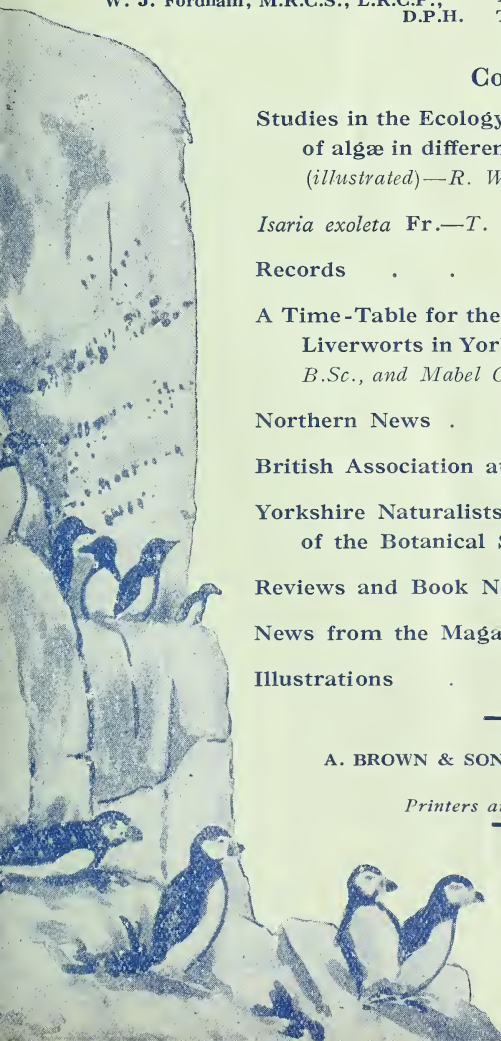
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

PAGE

Studies in the Ecology of Rivers. III. Growth of algæ in different depths in the River Cam (*illustrated*)—*R. W. Butcher and R. H. Mobbs* 241-249

Isaria exoleta Fr.—*T. Petch, B.Sc.* 250-251

Records 251-252

A Time-Table for the Life Cycles of some of the Liverworts in Yorkshire—*Phyllis M. Clapham, B.Sc., and Mabel Oldroyd, B.Sc.* 253-259

Northern News 259

British Association at Blackpool—*T.S.* . . . 260-262

Yorkshire Naturalists' Union: Annual Meeting of the Botanical Section 262-263

Reviews and Book Notices 263

News from the Magazines 264

Illustrations 243, 245

SMITHSONIAN INSTITUTION
NOV 17 1936
NATIONAL MUSEUM

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

A New Work by the Author of *YORKSHIRE* in the *Borzoi County Histories.*

ROMAN YORKSHIRE

208 + 12 *Pages, Demy 8vo, with 8 Full Page Plates, and 8 Diagrams and Maps in the text, bound in Art Cloth Boards, 7/6 net or post free 8/-.*

BY

F. R. PEARSON, B.A.

SENIOR HISTORY MASTER AT BRIDLINGTON SCHOOL

WITH FOREWORD BY

THE RT. HON. THE VISCOUNT HALIFAX

The Contents include :—

The Invasion of Britain and the Advance of the Frontier (A.D. 43-71)

The Invasion of Yorkshire and the Foundation of Eburacum (A.D. 71-77)

The Subjection of Yorkshire and the Problem of the Pennines (A.D. 77-85)

Some Branches of Ermine Street in Yorkshire

Some Roman Roads and Stations in North and East Yorkshire

Some Roman Roads and Stations in West Yorkshire

Roman York

Trade and Industry in Roman Yorkshire

The Coast Defences of Roman Yorkshire

Obtainable through all booksellers

An eight-page illustrated pamphlet will be gladly sent by the publishers, free of charge

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

STUDIES IN THE ECOLOGY OF RIVERS. III. GROWTH OF ALGÆ IN DIFFERENT DEPTHS IN THE RIVER CAM

R. W. BUTCHER AND R. H. MOBBS

Introduction

The large growths of algæ which are to be found on the bed of any shallow piece of water have been studied in several rivers by means of glass slides left submerged on the bottom (Butcher (2, 4,)). In the course of these investigations an experiment was devised to discover what effect the depth of water, and hence presumably, the varying intensity of light, had on such growths. Although this experiment was of a preliminary nature the result is published as a slight contribution to the problem of the nature and extent of the variation of algal development.

Method

In the study of the algal growths on the bed of the River Lark and elsewhere Butcher, as mentioned above, used glass slides. As, in this case, it was desirable to determine what grew on both upper and lower surfaces of a submerged object, a sphere suggested itself. Glass balls were at first chosen, but for reasons that will be obvious later these were not satisfactory and a material, more easily destroyable, was used in the form of ping-pong balls. Nine balls were threaded on wire at intervals of 0·25 metres and were kept in position by knots in the wire. Organisms were prevented from growing inside by sealing the holes with balsam. Each string of balls was weighed and when submerged in the river it took up a vertical position. The place chosen to submerge the balls was in a deep hole immediately above Jesus Lock on the River Cam at Cambridge where the current was very slow. The balls remained submerged for various periods between eight and ninety-four days.

A small sample on the lower and upper halves of the balls was smeared on to a slide for microscopic examination. The balls were afterwards cut into upper and lower halves, the balsam removed from the holes and the half balls dried at 100° C. in an oven and weighed. The balls were then cleaned, weighed again and the deposit obtained by difference. The difference included silt and organic debris and incinerations of the deposit were made in an attempt to discover the proportion of organic growth and inorganic silt. The debris in the deposit included such material as uredo- and teleutospores of rust fungi, pieces of wood fibre and pitted vessels,

NOV 16 1936

pith, tetraspores, plant hairs, and portions of mosses. It is unfortunate that this debris always occurs with the growths of sessile algæ, as it reduces the value of quantitative data obtained by methods such as the one here described. Incineration gives some idea of the organic content of the material, but this must be interpreted with care as the silt itself has been found to lose a considerable amount, though in the Cam this loss is fairly constant. Errors due to the rise and fall of the water level were negligible as also were losses in the weight of the half balls due to heating at 100° C.

The light intensities were estimated by the method used by Pearsall (5). Nine bottles, each with the requisite strength of 20 c.c. potassium iodide and 20 c.c. sulphuric acid, were placed at intervals of 0·25 metres on a weighted string in the river at the same spot used for the collection of the microflora. Large-mesh wire-netting was placed on the upstream side some distance away, to catch the floating debris, while the weeds in the immediate vicinity of the string, were cut away to prevent shading. Control bottles were placed just above the water in the light and in a closed tin in the water. The bottles were left for one or two days and then the liberated iodine was titrated with thiosulphate. The light intensity was determined six times.

From the data obtained, a graph of one of the experiments and of the mean light absorption is given in Fig. I. This result, which is similar to those obtained by Pearsall (5) in Esthwaite Water and by Pearsall and Hewitt (11) in Lake Windermere, shows that the majority of the light is cut off very quickly in the upper layers. In several of the experiments the results were very irregular in the middle layers, especially when the amount of sunlight was poor, suggesting that there was a certain amount of shading or a temporary occurrence of lower turbid layers. One of the more normal curves, obtained on August 2nd, 1927, is shown in Fig. I. The light conditions in the middle and lowest layers seem to be : below 1·5 metres, probably all equal darkness as far as blue light is concerned ; between 1 and 1·5 metres, light small and varying according to changing turbidity.

This method of estimating light is by no means as satisfactory as those in which a photoelectric cell is used, cf. Pearsall and Ullyot (10), but it gave a similar type of curve and it was the only method available at the time.

Consideration of the Growths as a Whole

Only the strings of balls which were left down for a period greater than twenty days are here discussed in detail since in shorter periods the rapidity of colonisation plays a major part, while conditions for photosynthesis and differential

growth show more clearly after longer periods. Sometimes certain factors, such as floods, silting and the devouring of the algæ by *Simulium* larvæ and similar organisms interfered with a normal growth-increment. Because of this fact low values in the results must be regarded with suspicion.

The first obvious point is that the maximum growth may

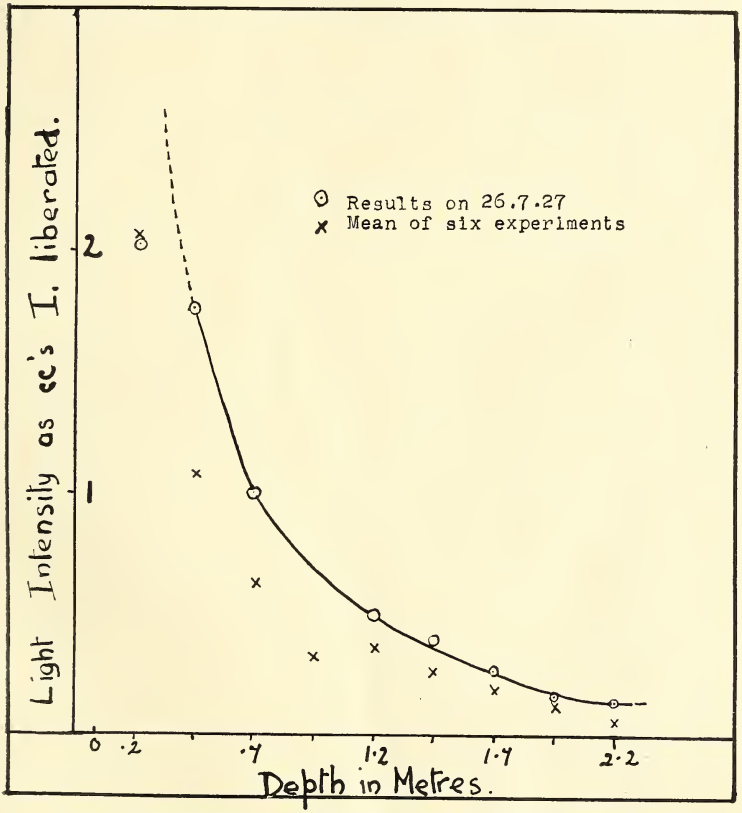


Fig. I. Diagram of Light Intensity in the R. Cam at Jesus Lock.

be a short distance below the surface and not where the light intensity is greatest. Since the algal growth is chiefly diatomaceous this maximum is probably due to the well-known tendency for diatoms to reach their optimum growth under conditions of low light intensity (cf. Marshall and Orr (6), Oberdorfer (7), etc.). As the winter approaches, this maximum is seen to move towards the surface, presumably because with the oncoming of less intense sunlight there is a

TABLE I. DEPOSIT IN M.GS. ON BALLS AT VARIOUS DEPTHS BETWEEN AUGUST, 1927, AND JULY, 1928

Ref. No.	Period of Submersion.	No. of days.	Mean depth of ball from surface. U.=upper half. L.=lower half.																				Total
			21 cms.		46 cms.		71 cms.		96 cms.		121 cms.		146 cms.		171 cms.		196 cms.		221 cms.			
			U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.	U.	L.		
6	31/7-20/8/27 ...	20	84	22	96	26	116	64	74	12	58	8	38	10	30	8	18	6	8	6		68
10	21/8-23/11/27 ...	94	141	28	141	37	122	37	103	28	122	65	131	38	47	20	75	20	28	9		1194
11	30/8-10/10/27 ...	38	77	26	53	15	38	29	34	11	38	11	38	11	30	8	30	8	19	19		490
12	13/10-23/11/27 ...	41	16	12	12	12	12	8	12	12	12	8	12	8	8	8	12	12	8	8		196
13	21/1-8/2/28 ...	18	7	7	7	5	5	2	9	5	5	5	9	11	7	13	11	13	7	5		364
14	15/2-15/3/28 ...	28	59	11	59	22	56	25	45	17	90	53	28	17	22	17	22	20	11	8		582
18	30/4-28/5/28 ...	28	116	64	129	78	156	53	70	39	81	36	64	28	53	20	45	22	17	19		1075
19	26/5-1/7/28 ...	35	52	52	63	42	56	42	24	17	56	21	36	11	28	7	39	14	25	11		599
1	18-26/7/27 ...	8	27	4	31	16	20	10	37	17	18	8	6	3	13	9	19	9	6	4		253
2	23-31/7/27 ...	8	26	8	12	8	25	7	12	6	13	7	8	8	10	6	16	6	7	4		188
7	5-13/8/27	8	14	6	20	3	30	6	23	5	18	5	10	5	8	3	15	5	6	5		185
8	8-16/8/27	8	19	7	27	12	30	9	27	7	28	10	15	7	12	7	21	10	12	9		270
9	13-21/8/27 ...	8	10	7	23	4	18	8	16	6	10	2	9	7	7	5	6	3	4	3		149
15	25/3-3/4/28 ...	9	24	12	24	36	46	12	26	13	42	19	12	6	19	13	13	13	13	9		356
16	3-12/4/28	9	22	6	16	11	15	14	27	4	14	20	14	2	6	4	6	3	5	3		180
17	16-27/4/28 ...	11	38	22	45	18	29	18	25	15	29	12	34	18	13	9	25	15	11	9		390
20	2-15/7/28	13	31	26	29	17	20	12	17	10	12	9	12	17	9	8	9	9	9	3		257

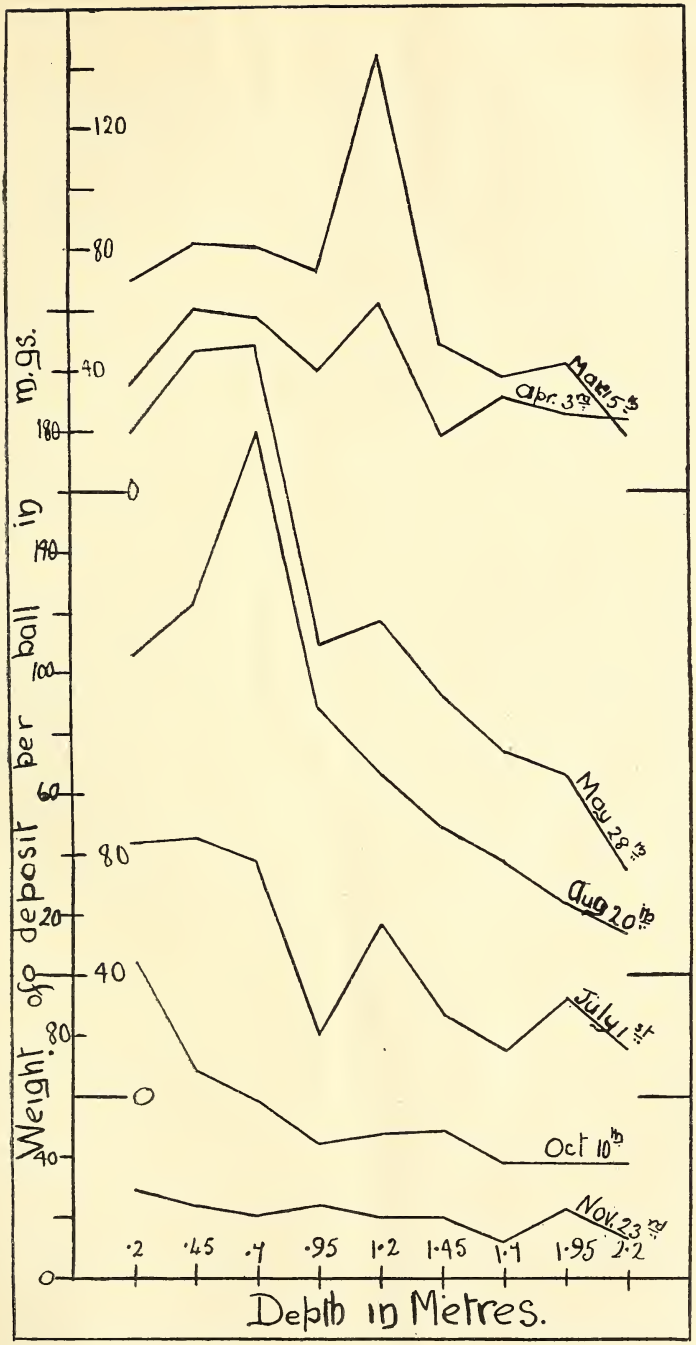


Fig. II. Total Deposits in m.gs. on balls at various depths.

decrease of total light, or perhaps of the light-rays inimical to the development of diatoms. This is further borne out by the fact that the maximum moves toward or away from the surface as the weather is bright or dull. For instance, after a very sunny period from August 5th to 16th the maximum was found 71 cms. below the surface, while after a wet period from August 20th to 31st the maximum was found on the surface ball.

After the first maximum the growths did not always decrease regularly with increasing depth, but other small increases occurred. One increase near the bottom was often very marked, as for example on July 26th and August 16th. The explanation of these variations towards the bottom is not obvious, though conceivably, local conditions of colonisation, stratification of denser layers of silt and the accompanying algæ, or increased silt deposit due to eddies, may be contributory factors. The increase is not due to silt accumulation alone as the loss in weight on incineration of the lower deposits was as great as that of the deposits on the upper balls. These increases near the bottom were not shown on the strings left down for a long time. However, even after very long periods the growth on the lower balls showed no tendency to catch up with that on the balls at the top, except when all growth was very small. This was the case in winter and also tended to a lesser extent in July when, as noted above, there was a wet, dull period.

The average loss in weight of the deposit on incineration was 35 per cent., but most of the algæ were diatoms which include large amounts of silica up to at least 50 per cent. of their dry weight. Hence it is probable that 60 to 70 per cent. of the dry weight on the balls may represent algal growth, the remainder being detritus.

Consideration of the Chief Species in the Growths

Percentage counts have been made of the growths by smearing a small amount on to the slide. This method has possibly destroyed beyond recognition some of the *Chætophoracæ*, *Ulvella*, *Chætopeltiseti*, which Butcher (3) has shown to be common and generally distributed in calcareous streams. The data obtained indicate that the algal growths were predominantly diatomaceous, which is apparently usual in such rivers (Butcher (4)). The dominant diatoms were : *Navivula menisculus*, *N. cryptocephela*, *Achnanthes minutissima*, *A. linearis*, *Cocconeis placentula*, *Synedra ulna*, *Melosira varians*, *Cymbella ventricosa*, and *Rhoicosphenia curvata*.

Although there was a variation in the amount of growth at different depths, no zonation of species, such as that

recorded by Oberdorfer (7) could be discerned, although *Achnanthes* spp. appeared to be somewhat more abundant in the surface metre and *Rhoicosphenia curvata* towards the bottom.

TABLE II. COMPLETE LIST OF ALGÆ FOUND ON THE SUBMERGED BALLS

Pandorina morum Bory.	Rarely. Summer.
Eudorina elegans Ehr.	Not uncommon. Summer.
Volvox globator L....	Very rarely. Summer.
Sphærella lacustris Wittr. ...	Once seen.
Ankistrodesmus falcatus Ralphs.	Not uncommon. Summer.
Sphærobotrys fluviatilis Butcher	Rarely in fragments. Summer.
Closterium moniliferum Bory. ...	Rare. Spasmodic.
Melosira varians Ag.	Abundant.
M. arenaria Moore	Very rare.
Diatoma vulgare Bory.	Common and variable.
D. elongatum Ag.	Rare.
D. hiemale Lyng.	Very rare.
Fragilaria capucina Des.... ...	Uncommon.
F. virescens Ralfs.	Common in Spring.
Synedra ulna Nitzsch.	Abundant and variable.
Eunotia lunaris Ehr.	Rare.
Cocconeis placentula Ehr. ...	Abundant, especially in Summer.
Achnanthes minutissima Kütz. ...	Abundant at times.
A. linearis W.Sm.	Abundant at times.
Rhoricosphenia curvata Kütz. ...	Abundant at times.
Gyrosigma acuminatum Kütz. ...	Rare.
Navicula pupula Kütz.	Rare.
N. cryptocephala Kütz.	Abundant, the commonest Navicula.
N. viridula Kütz.	Very rare.
N. radiosa Kütz.	Rare.
N. gracilis Kütz.	Common.
N. menisculus Schuman. ...	Very common.
N. Reinhartii Grun.	Uncommon and only in Spring.
N. oblonga Kütz.	Rare and only in Spring.
Pinnularia hemiptera Kütz. ...	Very rare.
P. viridis Nitzsch.	Very rare.
Amphora ovalis Kütz.	Rare.
Cymbella ventricosa Kütz. ...	Abundant.
C. cistula Hemp.	Common.
C. cymbiformis V.H.	Uncommon.
C. lanceolata Ehr....	Very common.
Gomphonema acuminatum Ehr. ...	Very rare.
G. constrictum Ehr.	Common.
G. parvulum Kütz.	Rare.
G. olivaceum Lyng.	Common only in Spring.
Nitzschia sublinearis Hust. ...	Rare.
N. acuta Hantz.	Uncommon.
N. dissipata Kütz.	Uncommon.
N. amphibia Grun.	Uncommon.
N. palea Kütz.	Very common at times.
Cymatopleura solea Breb. ...	Rare.
Surirella ovata Kütz.	Uncommon.
Campylodiscus hibernicus Ehr. ...	Very rare.
Chamæsiphon incrustans Grun. ...	Rare.
Chamæsiphonopsis regularis Fritsch	Rare in Summer.
Nostoc sp.	Only once seen : then abundant.

From a study of the half-balls it was found that deposition and growth occurred on the lower side as well as on the upper side of the sphere, but the weight on the upper side was always greater than that on the lower. This was doubtless due to two factors : the greater light incident on the upper surface and the accumulation due to gravity, of species with no attaching device, on the upper surface. In those cases, however, where the upper half of the ball had a deposit approximately equal to that found on the lower half of the ball above it, it was found that there was a similarity in percentage of the commonest forms, that is, there was no definite horizontal stratification of individual species.

Seasonal fluctuations were observed in this experiment similar to those recorded on the neighbouring River Lark

TABLE III. SEASONAL VARIATION OF DOMINANT ALGÆ AS PERCENTAGE OF TOTAL

Date Collected.	15 Mar. 1928	12 Apl. 1928	28 May 1928	15 July 1928	4 Aug. 1927	16 Aug. 1927	20 Aug. 1927	16 Nov. 1927	23 Sep. 1927	23 Nov. 1927
Days Submerged.	28	9	28	13	8	8	20	8	94	41
Melosira varians ...	10	**19**	**20**	2	**16**	7	5	**15**	3	6
Synedra ulna ...	**18**	**49**	13	3	3	7	1	11	3	3
Achnanthes spp. ...	1	+	13	2	6	**14**	**31**	2	4	4
Cocconeis placentula ...	3	2	2	**35**	**13**	**11**	8	10	11	**20**
Navicula spp. ...	**31**	**17**	**34**	**29**	**31**	**18**	**33**	**38**	**27**	**29**
Cymbella spp. ...	3	1	3	3	**16**	6	5	11	8	7
Rhoicosphenia curvata	1	+	2	11	1	4	7	1	**27**	**12**
Gomphonema spp. ...	**18**	3	4	7	3	**13**	7	6	5	10

(Butcher, Pentelow, and Woodley (3)). There was a large spring maximum, with *Synedra ulna* and *Melosira varians* dominant, a slightly smaller summer growth in which *Cocconeis placentula* and *Achnanthes* spp. played an important part and a small autumn maximum of all the species mentioned above. In winter there was hardly any growth but, of the few algæ recorded, *Rhoicosphenia curvata* predominated. The growth on the lowest balls kept fairly constant and the seasonal fluctuations tended to be greatest on the three uppermost balls where the growth was more rapid.

Summary

1. A preliminary study of the micro-flora growing at different depths of the River Cam has been made by means of a string of celluloid balls submerged at different depths.

2. A list of chief algæ, mainly diatoms, has been compiled.

3. Little variation was observed in the depth distribution of algæ species or the composition of the deposit.

4. The maximum growth was found to be just below the surface in summer and corresponded to a certain light intensity which was not the maximum value of the surface layers on bright days.

5. According to an estimation by the Iodine-sulphuric method most of the light incident on the surface of the water was cut off in the first metre and afterwards the intensity decreased slowly to the river bottom.

6. A study of the seasonal variation of the deposit showed a high spring maximum, a moderate summer growth, and a smaller autumn maximum, whilst in the winter it was very small. This corresponds to what has been found in other rivers.

Acknowledgements

Our best thanks are due to Dr. W. H. Pearsall for criticism and advice, and to the Ministry of Agriculture and Fisheries for facilities for work at their temporary laboratory.

Literature Cited

1. Butcher, R. W., Pentelow, F. T. K., and Woodley, J. W. A. 'A Biological Investigation of the River Lark.' *Fisheries Investigations*, Series III, No. 3, 1931.
2. Butcher, R. W. 'A Method of Investigating the Algæ from the Bed of a River.' *Trans. North. Naturalists' Union*, I, 1932.
3. Butcher, R. W. 'New and Little-known Algæ from the Beds of Rivers.' *New Phyt.*, XXXI, 1932.
4. Butcher, R. W. 'Studies in the Ecology of Rivers, II.' *Annals of Botany*, XLVI, 1932.
5. Hustedt, F. 'Bacillariophyta in Die Süsswasser Flora Mitteleuropas, X.' *Jena*, 1930.
6. Marshall and Orr. 'The Photosynthesis of Diatom Cultures in the Sea.' *Journ. Marine Biol. Ass.*, XV, 1928.
7. Oberdorfer, E. 'Lichtverhaltnisse u. Algerbesiedlung in Bodensee.' *Zeitschrift für Bot.*, XX, 1928.
8. Pearsall, W. H. 'The Aquatic Vegetation of the English Lakes.' *Journ. of Ecology*, VIII, 1920.
9. Pearsall, W. H. 'Biological Survey of River Wharfe.' *Journ. of Ecology*, XVIII, 1930.
10. Pearsall, W. H., and Ullyott, P. 'Light Penetration into Freshwater, I.' *Journ. of Expt. Biology*, X, 1933.
11. Pearsall, W. H., and Hewitt, T. 'Light Penetration into Freshwater, II.' *Journ. of Expt. Biology*, X, 1933.
12. West, G. S., and Fritsch, F. E. 'British Freshwater Algæ.' *Cambridge*, 1927.

ISARIA EXOLETA FR.

T. PETCH, B.Sc.

In July of this year (1936), Mr. W. G. Bramley sent me a fungus on a lepidopterous pupa, collected at Steeton Whin, Tadcaster. The pupa bore a group of five long and two short clavæ, arising rather close together, but not fasciculate, from its anterior half, and another small clava from the head. The clavæ are up to 5 cm. long, 0·25 mm. diameter below, tapering upwards, linear, unbranched, terete when fresh, but becoming twisted and longitudinally furrowed when dry, brownish black below, but ashy above owing to the presence of conidia. There is no external mycelium on the pupa in this specimen. The fungus resembles an immature *Xylaria*.

Examination showed that the fungus is a *Hirsutella*. The phialides or conidiophores are 20 to 40 μ high, and consist of an inflated base, usually flask-shaped but often irregular, 12 to 18 × 5μ, attenuated above into a stout sterigma, up to 20μ long. The phialides do not form a continuous layer, but more or less scattered clusters which give the clava a granular appearance under a low magnification, and they are situated, singly or in clusters, at the apices of short stout hyphæ, 4μ diameter. The spore cluster is oval or lemon-shaped, 10 × 7μ, and the individual conidia are hyaline, cymbiform, ends rounded, 9 × 2·5μ. By transmitted light, the exterior layer of the solid core of the clava is fuliginous.

Two more specimens were collected at Hubberholme in September, 1936, under moss on rocks. From these it is easy to understand how this species has been overlooked. The clavæ were scarcely visible above the moss, and were only found by observing the pupæ at the base of the moss, after it had been stripped off the rock. These are shorter than the preceding specimen, not exceeding 1·5 cms. in height, and branched, especially above, with the branches directed obliquely upwards. In these, the layer of phialides is more continuous than in the larger specimen.

This is evidently *Isaria exoleta* Fr., which was described by Fries from specimens on pupæ of '*Noctua exoleta*,' which he saw in the herbarium of Dr. Siemers in Germany. There is no specimen in the Fries herbarium at Upsala, and it does not appear to have been recorded again. Fries described it as gregarious on a fibrous mycelium, elongated, fragile, filiform, compressed, fuscous, everywhere the same colour and pulverulent. It had no distinct stalk, but was uniform throughout. He named it '*exoleta*,' because of its weathered appearance.

It is also, apparently, *Cordyceps fuliginosa* Ces., described by Cesati from a specimen on the pupa of *Bombyx antiqua* in Italy. Cesati described his species as having cylindrical clavæ, 14 to 17 mm. long, 1 mm. diameter, attenuated upwards, ashy, almost with the habit of *Xylaria scopiformis*. His figure of the whole fungus on the pupa, which is reproduced in Cooke's *Vegetable Wasps and Plant Worms*, shows short linear clavæ, while an enlarged figure of part of a clava under pressure shows a central core of parallel hyphæ with a confused outer layer of conidia, etc. It is clear that Cesati's fungus was a conidial form, not a *Cordyceps*, though the details are indecipherable. At that time, however, it was believed that all conidial clavæ on insects would ultimately develop into species of *Cordyceps*, and it was the practice to name them *Cordyceps*, probably to avoid changes in nomenclature, if and when the ascigerous stage was found.

In some respects this species resembles a *Hirsutella* found on lepidopterous pupæ in North America, the description of which is awaiting publication, but it differs in the arrangement of the phialides and the size of the conidia. The synonymy is as follows :—

Hirsutella exoleta (Fr.) Petch, *comb. nov.* ; *Isaria exoleta* Fr., *Syst. Mycol.* III (1832), 275 ; *Cordyceps fuliginosa* Ces., *Comment. Soc. Critt. Ital.* I (1861), 67.

RECORDS

SCAUP SUMMERING IN LANCASHIRE

A FEMALE Scaup (*Nyroca m. marila* Linnæus) which appeared on the little pond at Botanic Park, in the middle of industrial Liverpool, during a very hard spell in the winter of 1935-36, has remained there consistently until late September, when she was still there.—ERIC HARDY.

LESSER BLACK-BACK GULL NESTING IN SOUTH LANCASHIRE

IN 1936 the colony of Lesser black-backed gulls (*Larus f. fuscus* Linnæus) nesting on Simmonswood Moss, increased to two dozen pairs which were frequently watched by myself and Lord Sefton's gamekeeper, Mr. Taylor. Two pairs of Curlew (*Numenius a. arquata* Linnæus) also nested on the moss, which is within a few miles of the Liverpool border. Due probably to the reduction of gulls at the West Lancashire sand-dunes gulleries, Black-headed Gulls (*Larus ridibundus* Linnæus) nested in two localities of the Liverpool Corporation Sewage Farm, on the city border, in 1935, but in 1936, although many gulls summered there, I could find only one

nest, built largely of persicaria, a very abundant weed on the marshy tracts and grasses.—Eric Hardy.

IMMIGRATION OF SILVER Y MOTHS AT SCARBOROUGH

Mr. Hyde-Parker's account in the October number of *The Naturalist* of the invasion of Silver Y Moths in the Filey district would equally apply to the vicinity of Scarborough. About the time he indicates they swarmed here in very great numbers. On August 30th I walked down Peasholm Glen and saw many hundreds of them on every flower-bed, in groups of twenty or thirty flying about the blooms in the bright sunlight. They were equally numerous in other gardens in the town, and gradually disappeared during the next few days until their numbers became normal.—W. J. Clarke.

COLLEMBOLA SWARMS

Some time ago I gave a short account of the Swarming of Collembola (*Naturalist*, 1921, p. 129), and among the species mentioned was *Sminthurinus aureus* var. *ochropus* Reut. I have again this year, on October 10th, found the same species in extraordinary numbers on the uppermost stones of a broken-down wall in Ecclesall Woods, Sheffield. For a distance of fifty or sixty yards along the wall-top great numbers of individuals, immature and adult, were present. Under the lens they were very striking objects, although only barely 1 mm. in length, appearing intensely black, except for the two brilliantly white spots near the eye-patches. Among them were occasional individuals of other species, such as *Entomobrya albocincta* Templ., *Lepidocyrtus lanuginosus* (Gmel.), *Vertagopus cinerea* (Nic.), *Dicyrtomina minuta* (O. Fabr.), and *Dicyrtoma fusca* (Luc.).—J. M. Brown, Sheffield.

ELASMOSTETHUS INTERSTINCTUS L. IN THE SHEFFIELD DISTRICT

On October 6th I came across *Elasmostethus interstinctus* L. in large numbers, both as immature and adult individuals, on young birches on Blacka Moor, near Dore (Derbyshire), and two days later, also on young birches, in Ecclesall Woods, Sheffield. As this is the first time I have taken this conspicuous bug in the Sheffield neighbourhood and also in Derbyshire, it is perhaps worth recording. The only previous occurrence reported for Yorkshire, V.C. 63, appears to be Martin Beck and Wheatley Woods, near Doncaster (*Naturalist*, 1918, p. 262). The bugs were still present on October 12th. Their brilliant colouring caused the insects to be quite conspicuous in the bright sunshine we were experiencing.—J. M. Brown, Sheffield.

A TIME-TABLE FOR THE LIFE CYCLES OF SOME OF THE LIVERWORTS IN YORKSHIRE

PHYLLIS M. CLAPHAM, B.Sc., AND MABEL OLDROYD, B.Sc.

DESCRIPTIONS of livewort species and details of their structure and development are easy of access in text-books and published papers, but from the literature it is often difficult to obtain data as to the times of the year when the various stages in the life cycles of even the commonest of the liverworts take place under English conditions. During 1935 and 1936, material has been collected of some of the more frequently occurring liverworts in the Leeds and surrounding district with the object of compiling a time-table of the various stages in the life cycles in a few thallose and foliose types.

As examples of thallose liverworts, those selected were *Pellia epiphylla* (L.) Corda, *Conocephalum conicum* (L.) Dum., and *Marchantia polymorpha* L., and the material was collected from Meanwood valley in Leeds, Scotton Banks, near Knaresborough, and to a less extent from Mogington in the Washburn valley.

In Pellia the thallus is smooth and uniformly green ; the antheridia and archegonia are borne on the upper surface and occur on the same thallus. The antheridia are very numerous and commence to form very early close behind the growing apex of the new thallus lobes, and in this way a whole series are formed ranging in age from the oldest, which are farthest back from the growing apex. Each antheridium is sunken separately into a cavity in the thallus, and the positions of these may be recognised microscopically by a small red dot formed by the raised margin of the mouth of the cavity. This development of numerous antheridia scattered over the thicker central region of the thallus, is followed by the appearance of a small green flap of tissue, which forms a ' pocket,' open towards the growing apex, and beneath this flap develop the archegonia. Though the antheridia are formed in succession and vary considerably in age, the archegonia form a small group and are of approximately the same age and fertilisation takes place during the second half of June or early July. The fertilised egg immediately begins to develop into the sporophyte and, by the end of September, the final cell division to form the spores has usually taken place. The spores of Pellia are curious in that they germinate while still in the spore capsule and by the following January they are seen to be multi-cellular and chlorophyll containing. Up to this time the growth of the archegonium has kept pace with the developing sporophyte within, but during January the old archegonium

is burst and the shiny, dark green spherical capsules may be seen projecting from beneath the flap of the involucre. On this dark head may be seen intersecting light lines, which actually mark the positions of the first vertical divisions which occurred in the developing capsule. Along these same lines also occurs the subsequent dehiscence of the capsule and, owing to their manner of formation, examination of the four valves shows that two of these are pointed while the alternate ones are blunt.

Early in March the cells of the seta of the sporogonium, which have remained much flattened up to this time, suddenly extend to many times their original length and carry the capsule to a height of an inch or two above the thallus surface. The capsule wall bursts and the spores are blown away from among the paint-brush like tuft of sterile elaters which remain attached to the floor of the old capsule. The stretched cells of the seta are colourless and fragile and soon collapse. This life cycle may be summarised with the appropriate dates in the following time-table :—

PELLIA EPIPHYLLA

January (1935)	
February ...	... Antherida forming.
March ...	... ,, ,,
April ...	... ,, ,, Some antheridia almost mature.
May	
June ...	... Some antheridia mature. Young archegonia (June 3rd). Mature archegonia (June 23rd) and fertilisation.
July	
August	
September	... Some capsules with spore tetrads, spores or spores
October	... with divisions (September 25th).
November	... Many capsules with spores with divisions and elaters with thickenings.
December	... Spores partly germinated and walls thickening.
January (1936)	
February	
March ...	... Dehiscence of capsules.
April ...	...

Conocephalum and Marchantia are both types in which the thallus is of a more complex construction with characteristic air chambers which open to the upper surface by pores. The presence of these air chambers gives the upper surface of the thallus a polygonal pattern. Conocephalum grows on wet banks or on stones in streams and spreads rapidly by means of new thallus branches which begin to grow out in January, when their light green colour shows them up in striking contrast to the dark colour of the older strap-like lobes of the previous season. Marchantia grows in drier situations and the new thallus lobes, which again grow out

in winter, soon replace the thallus of the previous season as this tends to turn brown and die away.

In Conocephalum the antheridia and archegonia are borne on different plants. Each antheridium lies in a sunken cavity on the upper surface of the thallus, and these cavities are grouped together on a small raised area, which was first recognised just behind the growing apex of the new thallus lobes in April (April 6th from Scotton Banks and on April 27th from Meanwood). Development has shown that such a raised, antheria-bearing region of the thallus in Conocephalum is of the nature of a sessile branch system.

The archegonia are also borne on a modified branch system, which was first recognised during the first week in June as a small outgrowth from the lower side of the thallus just behind the growing apex. This branch system has a stalk-like region and a conical head, which is so characteristic as to have given to this plant both its generic and specific name. By early July the branch had grown sufficiently for the conical apex to have been carried round so that it can now be seen from the upper side of the thallus. Fertilisation is effected at about this time and the fertilised egg immediately proceeds to develop into the spore-bearing sporophyte. As in Pellia, spore formation is completed by the end of the year, but while still contained within the capsule the spores germinate and are multicellular when dispersed. In March the stalk of the whole female branch system elongates suddenly to a length of several inches and the capsules dehisce.

CONOCEPHALUM CONICUM

	Male plant.	*Female plant.*
January (1935)	New thallus lobes.	
February ...		New thallus lobes.
March ...		
April ...	Young antheridia (April 6th) Older antheridia (April 27th).	
May ...		
June ...	Mature antheridia.	Young archegonia (June 15th).
July ...		Mature archegonia.
August ...		Fertilisation and sporophyte form. Spore tetrads (August 14th) Single celled spores.
September ...		
October		
November ...		
December ...		Germination of spores in capsule.
January (1936)		
February ...		
March ...		Elongation of stalk of female branch and dehiscence of capsule.
April		

As will be seen from the time-table, the general sequence of stages is very similar in Conocephalum to that for Pellia, though each stage tends to be slightly later than in that type.

In Marchantia the antheridia and archegonia are again borne on distinct plants and are developed upon special, modified branch systems, which in each case originate from the ventral face of the thallus. In each case the growing apex of the special branch forks three times and eight series of antheridia and archegonia respectively are formed in series behind these growing apices.

By the end of March the tiny lobed heads of some of the male branches (antheridiophores) are appearing and antheridia are already forming when this head is only about the size of a pin head and is not yet raised from the surface of the thallus. By the end of April some antheridia are mature and the antheridiophores are growing up above the thallus level, while elsewhere younger antheridiophores may be just appearing.

On the female plants, archegoniophores appear towards the end of March and some archegonia are already mature by the beginning of April, that is rather earlier than they were recognised in Pellia or Conocephalum. Fertilisation occurs when the head of the archegoniophore is still close to the thallus. During May the stalks of the archegoniophores gradually elongate and by early June these are about $\frac{3}{4}$ in. long and the nine rays of the head spread out horizontally, rather like the spokes of an umbrella. The stalk of the archegoniophore in Marchantia grows by a process of cell division, not merely cell extension, and consequently it is a firmer and more persistent structure than in Conocephalum.

Owing to the more prolonged period over which new antheridiophores and archegoniophores are appearing and the succession of antheridia and archegonia formed on each, the period over which fertilisation may take place is also more prolonged. However, by the end of August and beginning of September, some capsules of young sporophytes are already visible as yellow balls beneath the heads of the archegoniophores and about this time capsules begin to dehisce and single celled spores are liberated. This liberation of the spores at the end of the summer in Marchantia is a marked point of contrast with Pellia and Conocephalum.

Marchantia is also propagated freely by the development of a sexual gemmæ.

Propagation by gemmæ continues during the summer from March to the end of August approximately.

MARCHANTIA POLYMORPHA

	Male plants.	*Female plants.*
January (1935)		
February ...		
March ...	Young antheridia.	Young archegonia.
April	Some mature antheridia.	Some mature archegonia.
May	Fertilisation.	
June		
July		
August ...	Spores developing in early sporophytes.	Dehiscence of capsules.
September ...		

FOLIOSE TYPES

Material was collected mainly from Mogington, up the Washburn valley, about 20 miles from Leeds.

In the foliose liverworts the antheridia occur in the axils of bracts, sometimes on special male 'spikes,' while the archegonia always occur in groups at the ends of branches, surrounded by involucral bracts and the tubular perianth which renders their position so conspicuous. The early stages in development are much more difficult to find than in the thallose types, but although the data are less complete, they are sufficient to give indication of the approximate times at which stages in the life cycle are reached.

The species examined were selected as being ones which produce capsules relatively freely, and the following were found to be suitable types, *Aplozia sphærocarpa* (Hook) Dum., *Cephalozia bicuspidata* (L.) Dum., *Diplophyllum albicans* (L.) Dum., and *Scapania undulata* (L.) Dum.

Aplozia occurred as bright green compact tufts on the moist bank of the stream. It is a paroicous type, *i.e.* the antheridia occur in the axils of bracts on the same stem as, but below the perianth which surrounds the terminal group of archegonia.

Cephalozia was readily recognised by the slender habit of the plant with the small, deeply bi-cleft and obliquely-inserted leaves. The plants are monoicous, the antheridia occur in the axils of bracts towards the end of a branch, which may be recognised as a male spike owing to the fact that the bracts are more crowded and the presence of the axillary antheridia renders the branches somewhat thicker. Such male spikes frequently arise from the base of branches which terminate in a perianth. The perianth is very conspicuous and is surrounded at its base by several large involucral bracts.

Diplophyllum is a dioicous type with plants of the two sexes often in quite distinct patches. The bracts of the male

spike are closely inserted and show a tendency to turn red as they become older.

Scapania was collected mainly from stones in the stream and was often submerged. The plants are dioicous with the antheridia borne in axillary groups towards the ends of branches on the male plants. In the female plants the involucral bracts are large and the perianth is flattened dorsiventrally.

Besides the sexual methods of reproduction, propagation by gemmæ was observed in Diplophyllum and Scapania. Gemmæ are also reported for Cephalozia, but were not seen during the present investigation. The time-table for the life cycle shows close agreement for Cephalozia, Diplophyllum and Scapania. The antheridia begin to develop in January. By February the earlier formed antheridia already have spermatozoids formed, while young antheridia are still in early stages of formation in the axils of bracts nearer the growing point of the branch. Thus spermatozoids are maturing and being liberated in succession from late February, through March to early April.

The archegonia are also forming during January and February. These develop before the perianth has become evident and are at first merely surrounded by the involucral bracts. Such archegonial buds are difficult to distinguish from vegetative buds at this stage.

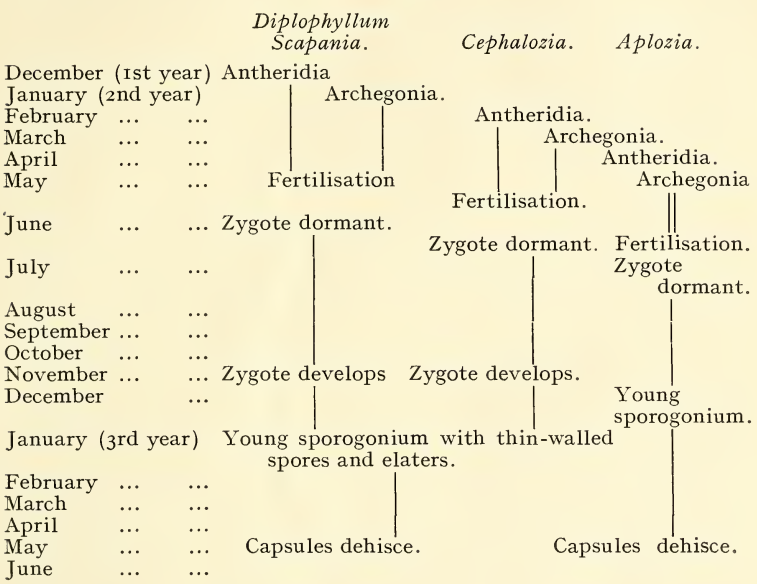
It is, perhaps, worth emphasis how early in the year these organs are formed in the foliose types. The early stages of antheridia and archegonia formation were obtained in material which was collected when these liverworts were frozen in ice and appeared quite unharmed by these severe conditions.

The perianth grows up in March, whether fertilisation has occurred or not, though it is usually better developed if it surrounds a group of archegonia, of which one has been fertilised. After fertilisation the zygote remains dormant through the summer and autumn months and development of the sporogonia is not resumed until late in the year. Stages in the development of the sporogonia were not found, but young sporophytes were present in December and January, which must have developed during November, since development had not commenced in material collected in October. Between February and May the spore capsules mature. The seta elongates to a length of $\frac{1}{2}$ to 1 in., carrying the spore capsule well above the perianth, and finally, during the period from late April into May, the capsule wall dehisces into four valves and the spores are liberated.

In Aplozia the reproductive organs appear to be formed somewhat later, and antheridia and archegonia respectively

were not recognised until May and June. The times for the succeeding stages correspond closely to those for the other types.

FOLIOSE TYPES



NORTHERN NEWS

From Mr. Hans Schlesch I have received the following reprints which contain reference to J. W. Taylor's Monograph on British Mollusca, and other items of interest to northern conchologists :—Nachtrag zum Rev. Verz. dän. Land—und Süsswassermollusken ; Nachtrag zu Revidiertes Verzeichnis der dänischen Land—und Süsswassermollusken und ihre Verbreitung ; and Bemerkungen über die Verbreitung der Landmollusken im östlichen Ostseegebiete.—T.S.

We see that Scunthorpe has now obtained the status of a Borough, and its arms, which have been granted by the College of Heralds, is interesting, as two examples of the liassic fossil, *Gryphoea incurva* occur on the shield. There are five links representing the five townships of Scunthorpe, Frodingham, Crosby, Ashby, and Brumby, which now form one borough ; and a sheaf of corn. The crest consists of a helmet from the top of which is a furnace and flame, and there is a latin motto REFULGIT LABORES NOSTROS COELUM, which means 'The heavens reflect our labours.' This is quite good, especially to those who see the sky above Scunthorpe on a dark night.—T.S.

BRITISH ASSOCIATION AT BLACKPOOL
SEPTEMBER, 1936

THE meeting of the British Association at Blackpool this year was remarkable for the extraordinary samples of English weather, and for the fact that few people in Blackpool seemed to be aware of the Association's existence ! The taxi drivers did not know where or what the Reception Room was, and between Headquarters and the Reception Room not a single guiding label was on view, though having got to the Reception Room or to a sectional committee room, an arrow pointed to the door !

The Press got hold of one or two of the older men who looked like ' scientists,' and persuaded them to be photographed on the roundabouts and swings, and the members had a ' special facilities ' ticket which enabled them to have a free ride on a tram, except on the busy days ! They also had a free view of the lights. The Chairman of the London, Midland & Scottish Railway, as President of the Association, explained that as the British Association once met at Bournemouth it had now visited Blackpool. We wondered why !

There was no handbook to the scientific attractions of the district, in fact such a work would have been a miracle.

The General Committee agreed that the Meeting next year should be at Nottingham on September 1st to 8th, and that Sir Edward Poulton should be the President ; Cambridge in 1938 from August 17th to 24th ; and Belfast in 1939.

At the Conference of Delegates, at which the representative of the Yorkshire Naturalists' Union was in the Chair ; the first session was devoted to Dr. A. B. Rendle's Presidential Address on ' The Preservation of Native Floras,' followed by Sir Albert E. Kitson, who read some notes on ' The Menace of Rubbish Dumping in places of natural beauty,' which had largely been prepared by Dr. Lang. A resolution was sent to the General Committee urging that steps should be taken to prevent the spoilation of the countryside, the seashore, and sites of scientific interest, by the accumulation of rubbish. At the second session, Captain Dannreuther read a paper, prepared by Dr. C. B. Williams and Mrs. K. Grant, both of whom were absent, on ' The Insect Immigration enquiry, with special reference to the North-western Area.' This was illustrated by a number of slides showing the areas from which records of the occurrence of these migratory butterflies had been received, and in the case of each species-chart shown, Yorkshire and its area was a perfect blank ! Your delegate pointed out that entomological records in the Yorkshire district were as complete as those of any part of the

country, and many had, in fact, been recorded in *The Naturalist*, but they had not been seen by Captain Dannreuther and consequently were absent in the reports covering the rest of the British Isles. It was stated that ordinary press reports could not be relied upon as the average correspondent could not distinguish a ' Red Admiral ' from a ' Painted Lady.' This seems odd ! It should not be difficult even in the dark ! To help in this useful work, reference was made to the Handbook issued by the British Museum (Natural History), South Kensington, on ' British Immigrant Butterflies and Moths,' published at 9d. It has fine-coloured plates of all the species concerned.

There was the usual wealth of papers and discussions, but to enumerate the titles alone would occupy more space than we can afford. The following, however, may be selected as of more interest to readers of *The Naturalist*, summaries of many of which appear in the Journal issued to the members : ' The Uses of Fungi,' by J. Ramsbottom ; ' Lower Carboniferous South of Carnforth,' by Dr. R. G. S. Hudson ; ' Millstone Grit and Glacial geology of Caton Moor, near Lancaster,' by F. C. Slinger ; ' Geology of the Preston District,' by L. H. Tonks ; ' The Importance of topographic maps to mining,' by Sir Albert E. Kitson ; ' The Agricultural geography of Fylde,' by W. Smith ; ' Rural settlement in the Isle of Man,' by E. Davies ; ' Discussion on the Geomorphology of the Irish Sea Basin ; Plankton ecology and the hypothesis of animal exclusion,' by Professor A. C. Hardy ; ' The Folk-tale in Westmorland and North Lancashire,' by Dr. E. Wilson ; ' The coracles and curraghs of the British Isles,' by J. Hornell ; ' Trout food and river fauna,' by Miss W. E. Frost ; ' Palæontology and humanity,' by Professor H. L. Hawkins ; ' Discussion on the function of the Museum in Zoology ' ; ' National Parks and the preservation of nature in England,' by Dr. Vaughan Cornish ; ' A Comparison of ring-porous and diffuse-porous hardwoods,' by Professor J. H. Priestley and Miss L. I. Scott ; ' Discussion on Earth Movements in Carboniferous times in North England ' ; ' The effects of dormant buds and roots on the wood of *Salix cerulea*, the cricket bat willow,' by H. P. Hutchinson ; ' The Biology of Waterworks,' by Dr. W. H. Pearsall ; ' Discussion on Coal Measure correlation ; the Lancashire coal industry," by W. Prest ; ' The fossil horsetails (*Equisetites*),' by Professor T. Harris, etc.

The Advancement of Science (248 pp., 3/6) was on sale towards the close of the meeting. It included the Presidential Address of Sir Josiah Stamp on ' The Impact of Science upon Society,' and the addresses of the Presidents of Sections, viz. ' Trends in Modern Physics,' by Professor Allan Ferguson ;

' The Training of the Chemist for the Service of the Community,' by Professor J. C. Philip ; ' Palæontology and Humanity,' by Professor H. L. Hawkins ; ' Natural Selection and Evolutionary Progress,' by Dr. J. S. Huxley ; ' Mapping of the Colonial Empire,' by Brig. H. S. L. Winterbotham ; ' Plantation Economy,' by Dr. C. R. Fay ; ' The Engineer and the Nation,' by Professor W. Cramp ; ' The Upper Palæolithic in the Light of Recent Discovery,' by Miss D. A. E. Garrod ; ' The Control of the Circulation of the Blood,' by Professor R. J. S. McDowall ; ' The Patterns of Experience,' by A. W. Wolters ; ' The Uses of Fungi,' by J. Ramsbottom ; ' The Future in Education,' by Sir Richard Livingstone ; and ' Soil Science in the Twentieth Century,' by Professor J. Hendrick.

Perhaps the most notable feature of the meeting was the absence of the more familiar members. True, ' Father Time ' had taken toll of a few, but many of the ' old stagers ' had evidently not been tempted by the attractions of Blackpool. In fact, for the first time for years, the Red Lion Club had to cancel its annual orgy from its sheer inability to get a quorum of lions ; consequently any ' cubs ' will have to wait until they get to Nottingham before they can be fed !

T. S.

YORKSHIRE NATURALISTS' UNION : ANNUAL MEETING OF THE BOTANICAL SECTION

October 10th, 1936

The members of this Section were again indebted to Prof. J. H. Priestley for his invitation to hold their annual meeting in the Botanical Department at Leeds University. In the afternoon the officers and members of the various committees were nominated and the reports of the Secretary and Conveners of the Committees were read and discussed ; the variable weather of the year provided the members present, and those who had responded to requests for their views, with sufficient matter to make the meeting both interesting and profitable. A welcome cup of tea presided over by Mrs. Priestley with the aid of Mrs. Grist and Miss Scott, gave those present ample time for conversation, and in the evening Mr. R. D. Misra gave a paper entitled ' Aquatic plants and lake muds.' He described the succession of certain rooted aquatic plants in Lake Windermere from shallow to deeper water and discussed this distribution in relation to hydrogen ion concentration, chemical analyses, and other factors. In relation to tests for free bases, he described how Comber's test (the production of a red colour when a drop of an alcoholic solution of potassium thiocyanate is added to the extract of a soil deficient in free bases) could not be applied directly to these lake muds. With the addition of a drop of hydrogen peroxide, however, the test worked well and indicated that the iron liberated was present in the ferrous form and the soils possessed strong reducing properties. In agreement with this, nitrogen is transformed to ammonia (now nitrates), carbon to marsh gas, and sulphur to sulphides or sulphuretted hydrogen.

Dr. W. A. Sledge described some of his observations on plant communities and soil cultivation in Dalmatia. In the laboratory he had

an exhibit of plants representative of the vegetation of the coastal Mediterranean region and the Karst, and a few plants from the Dinaric Alps.

Miss Phyllis Clapham and Miss Mabel Oldroyd had an exhibit of microscopic slides to illustrate stages in the life cycles of some of the common leafy and thalloid liverworts and the times of the year at which such stages are to be found in the district around Leeds.

Miss Edna Sissons had an exhibit of microscope slides to illustrate stages in the life cycle of the Scot's pine from material gathered near Fewston, with dates on which the material had been collected.

Mr. Wattam had a pot of seedlings of Juniper which had been successfully reared from seed and which were now in their second year of growth.

REVIEWS AND BOOK NOTICES

An Almanac for Moderns, by **D. R. Peattie,** pp. 396. Allen and Unwin, 7/6 net. This is not a book which can be easily classified, but it is certainly one for the reflective naturalist to consume at his leisure. It is a day book of biological thought and naturalistic observations and comments. The seasons' changes, birds, insects, and plants figure with famous naturalists in providing the material for a most engrossing work. A wide reading, a keen observation, and profound knowledge of biological fact and thought, contribute as much to the success of this work as a lucid and flowing style. The reviewer has read nothing by Mr. Peattie before, but will hope to remedy this deficiency in the future.

Singing in the Wilderness—a Salute to John James Audubon, by **D. R. Peattie,** pp. 245, with seven plates. Allen and Unwin, 7/6 net. This is strictly a biography of the great French-American bird painter, Audubon. It would be unfair to convey the impression that it is merely a biography, since the author has successfully attempted to clothe the dead bones of history with life and has incorporated the love story of the painter and his wife. Moreover, the author is a keen naturalist and bird-lover, and he is quite at home in discussing the details of the artist's work and in constructing the background of the American countryside against which he worked. The narrative is smooth and interesting and the whole work is a fitting tribute to one who is now too little appreciated in this country.

Boda the Buffalo, by **Lt.-Col. Cecil Lang** (Skene Dhu), pp. 305. Herbert Jenkins, 6/- net. This volume is a collection of tales of the lives of wild animals in India. While the buffalo holds pride of place, crocodiles, bears, elephants, wild dogs, and the mahseer are also represented. Col. Lang's ability as a writer is well known. He has the gift of describing the wild places, he possesses the ' seeing eye ' which fastens on the pertinent, and he has an intimate knowledge of the animals he describes. His stories, therefore, impress the reader as representing the real life of wild India. They may be strongly recommended.

Skill with Rod and Gun, by **Sir Charles Tyrrell Giles,** pp. 124. Country Life, 7/6 net. This is mainly a series of sporting reminiscences and as the experiences of a long life, they are of interest to the naturalist with sporting tastes. Of more general appeal, no doubt, will be the chapters dealing with grey squirrels, the grey seal, vermin, and rookeries. The author has nothing good to say about the little owl and some hard words about rooks. He has evidently observed keenly in directions interesting him. His book is readable, full of sporting interest, and well worth consideration as a present.

NEWS FROM THE MAGAZINES

A well-illustrated article on ' Britain's Changing Coast Line ' appears in Part 33 of *Shipping Wonders of the World*, recently published. The Yorkshire and Lincolnshire coasts are described.

An important section of *The Quarterly Journal of the Geological Society of London*, No. 367, is occupied by an article on ' The Carboniferous Succession in the Slaidburn District,' by D. Parkinson. The publication also contains obituary notices of many northern geologists, namely, H. A. Allen, Herbert Bolton, C. W. Fennell, P. F. Kendall, J. D. McCormick, and H. H. Thomas. An Obituary Notice of Dr. Bernard Smith, Director of the Geological Survey, occurs in *Geography* for September.

' Sheffield : Its Rise and Growth,' by R. N. Rudmose Brown, is the title of a well-illustrated address given at the Conference of the Geographical Association, and appears in its journal, *Geography*, for September.

The bound *Abstracts of the Proceedings of the Geological Society of London* is useful as it contains summaries of papers read and discussions which occurred during the meetings between November, 1935, and July, 1936.

The Entomologist's Record for September contains " *Melissoblaptes bipunctanus* Zeller, 1848,' by L. T. Ford ; ' Notes on the Lepidoptera of Skye,' by W. S. Gillies ; ' In Spain Again,' by M. Burr ; ' Early Stages of Indian Lepidoptera,' by D. G. Sevastopulo ; ' Notes on Collecting and Supplements, " British Noctuæ ",' by H. J. Turner ; and ' New Heterocera from Asia Minor,' by H. B. Salz.

The Entomologist for October contains ' Some varieties of British Lepidoptera,' by N. D. Riley (with plate) ; ' Note on the biology of *Myelois neophanes* (Lep. Pyralidæ),' by J. C. F. Fryer and H. M. Edelsten ; ' Migration records, 1936,' by Capt. T. Dannreuther (*Pieris brassicæ*, Mablethorpe, Lincs. ; *Plusia gamma*, Lincs., Yorks., Isle of Man, and Northumberland) ; ' Notes on the Distribution of the European Species of the genus *Melanargia* (Lep. Satyridæ),' by A. M. Peake ; ' A New Species of *Earias* Hb. (Lep. Noctuidæ),' by E. P. Wiltshire ; and numerous notes and observations.

The Entomologist's Monthly Magazine for October contains ' A preliminary list of the Coleoptera of Windsor Forest.' by H. Donisthorpe ; ' *Anchonidium unguiculare* Aube. in Cornwall,' by E. C. Bedwell ; ' *Cis savilli* n. sp., a species of Coleoptera new to Science,' by H. Donisthorpe (one on white sedge in sphagnum swamp in Windsor Forest) ; ' A New Species of *Proterhinus* (Col. Rhync.) from the Marquesas Islands,' by R. C. L. Perkins ; ' A New Species of *Xanthophæa* (Coleoptera : Carabidæ from New Caledonia,' by E. B. Britton (with figure) ; ' The Parasites of British Birds and Mammals, X. Records of Mallophaga from Birds,' by G. B. Thompson ; ' The Ethiopian Species of the *Fasciata* Group of the genus *Bactra* (=*Promachus*) (Diptera : Asilidæ),' by B. M. Hobby ; and several shorter notes.

The New Phytologist, No. 3 of Volume 35, contains a number of articles including two of ecological interest, as well as a review by Dr. H. Godwin of a work on the structure and identification of pollen grains. The ecological papers are ' Studies in the Antecology of *Cladium mariscus*,' by Verona M. Conway, and ' Mechanical factors in the distribution of a blue-green alga, *Rivularia hæmatites*,' by L. E. R. Picken. Other articles include ' Auxin and Correlative Inhibition,' by Barbara Le Fanu ; ' Seasonal Changes in the Carbohydrates of the Wheat Plant,' by H. R. Barnell ; and the ' Structure of the Cone Scales of Lepidostrobus,' by M. A. Chrysler.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. **Telephone: Temple Bar 9451.**

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

THE GENTLEMEN GO BY

A Tale of Smuggling Days on the North Yorkshire Coast. By ELIZABETH BARNARD BLACK. 220 pages, crown 8vo, with illustrations and map, bound in cloth boards, covered with an attractive picture wrapper. 3/6 net, or post free 4/-.

The title of this book has been taken from "A Smuggler's Song" by Rudyard Kipling. Its setting is in the early days of the nineteenth century and faithfully depicts the characteristics of the Dales folk of that period, their wit, their capacity for driving a hard bargain, their love of the moors and sea, and their passionate devotion to smuggling. The characters are in keeping with the wild and often lonely, yet perennially beautiful, nature of the locality. Love and tragedy are intermingled, the whole being relieved by many humorous incidents, some of which take place at the market town which can be recognised as Pickering, and by charming farmhouse idylls between the heather and the sea, in and around Staintondale.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED,

5 Farringdon Avenue, London, E.C.4.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S. — R. W. LLOYD, F.R.E.S.
H. G. CHAMPION, M.A., F.R.E.S. — F. LAING, M.A., B.Sc., F.R.E.S.
J. E. COLLIN, F.R.E.S. — H. SCOTT, M.A., Sc.D., F.L.S.
J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

NATHANIEL LLOYD & CO., LTD., BURRELL STREET, LONDON, S.E.1.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

The EARLY HISTORY *of the* NORTH RIDING

By WM. EDWARDS, M.A.

Demy 4to (9″ × 11¼″), 283 *pages, with* 16 *plates, frontispiece in sepia, and Map of the North Riding at end. Full cloth* **10/6** *net, post free* **11/0.** *Edition de luxe, full leather, gilt top,* **21/-** *net, post free* **21/6.**

CONTENTS :—I. Prehistoric Times—II. The Romans—III. The Anglican Kingdom of Northumbria—IV. Pre-Conquest Monasteries—V. The Northmen—VI. The Norman Conquest and Settlement—VII. Political History under the Normans and Early Plantagenets—VIII. The Feudal System—IX. The Barons—X. North Riding Castles—XI. Thomas, Earl of Lancaster—XII. The Danger from the Scots—XIII. The Foundation of the Religious Houses (I.)—XIV. The Foundation of the Religious Houses (II.)—XV. The Life and Works of the Monks—XVI. The Wealth and Power of the Religious Houses—XVII. Churches and Chantries in the Middle Ages—XVIII. Town Life in the Middle Ages—XIX. Country Life in the Middle Ages—XX. The Forests—XXI. Early Yorkshire Pedigrees—Index of Place Names ; Index of Personal Names ; Index of Subjects.

The Manchester Guardian says :—" This is a readable, popular history from the New Stone Age to the fifteenth century, with chapters on the feudal system, on the numerous monasteries in the district, and on the daily life of monk and layman in the Middle Ages. In the period to which it relates the Riding was the scene of many foreign invasions and of much civil war, and the author's object has been to show the relation of the local history to that of the nation. The volume contains many illustrations, and the price is astonishingly low for so handsome a work."

LONDON : A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE, E.C.4.
AND AT HULL.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.
Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.
Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by :—Professor JAMES RITCHIE, M.A., D.SC., F.R.S.E. ; EVELYN V. BAXTER, F.Z.S. H.M.B.O.U. ; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U. ; H. S. GLADSTONE, M.A., F.R.S.E. F.Z.S. ; C. H. O'DONOGHUE, D.SC., F.R.S.E. ; ANDERSON FERGUSSON, F.R.E.S. ; A. R. WATERSTON, B.SC.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London. November, 1936.

DEC., 1936

No. 959
No. 732 of current Series

The NATURALIST

A MONTHLY ILLUSTRATED JOURNAL

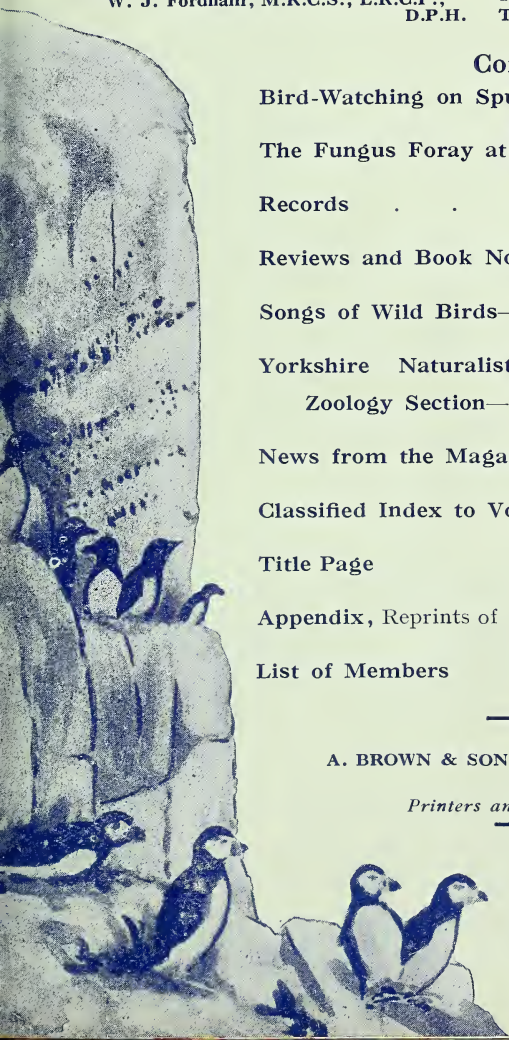
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.
J. M. Brown, B.Sc., F.L.S., F.R.E.S.
W. H. Burrell, F.L.S.
Chris. A. Cheetham, F.R.E.S.
W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.
Riley Fortune, F.Z.S., F.R.P.S.
Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.
Mrs. Elsie M. Morehouse.
Thos. Sheppard, M.Sc., F.G.S., F.Z.S.
T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

	PAGE
Bird-Watching on Spurn Head	265-269
The Fungus Foray at Buckden . . .	270-275
Records	276
Reviews and Book Notices	276-277
Songs of Wild Birds—*W. R. Grist, B.Sc.* . .	278
Yorkshire Naturalists' Union: Vertebrate Zoology Section—*E. Wilfred Taylor* . .	279-280
News from the Magazines . . .	269, 278, 280
Classified Index to Volume	281-288
Title Page	
Appendix, Reprints of Y.N.U. Excursion Reports I to XXIV	
List of Members	

SMITHSONIAN INSTITUTION
DEC 17 1936
NATIONAL MUSEUM

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.
Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription 15/- per annum.

legends, folk-lore and curious beliefs about various birds

THE GODS HAD WINGS

by W. J. BROWN 7/6 net

With 17 Woodcuts by JOHN FARLEIGH

Times Literary Supplement: "Mr. Brown recounts, with knowledge and a keen eye for the curious, yet without any parade of learning, all sorts of strange beliefs about birds. The result is a rich feast, which helps one to realize how large a part the bird creation has played in the devotion and imaginative life of man."

Scotsman: "This well written and produced little volume, with its superbly executed woodcuts, should prove very attractive to all readers interested in bird-life or in folk-lore and mythology."

10 Orange St. Constable *London W.C.2*

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126. **Telephone: Temple Bar 9451.**

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

BIRD-WATCHING ON SPURN HEAD

October 10th and 11th, 1936

Recorded by Messrs. W. Bennett and W. R. Grist, Leeds and Messrs. V. S. Crapnell, G. R. Edwards, and F. Murgatroyd, Halifax.

To be favoured by ideal weather conditions during this woefully wet year was by no means the least factor which ensured the success of our week-end on Spurn.

An early start, a smooth ride through the October countryside, our packs emptied, then off again to where a yellow sun glistened on the Humber estuary. A narrow cart road led between bramble hedges to the sea, with low uncultivated fields rising from marram-covered sand-dunes, with here and there a party of Lapwings or a twittering flock of mixed Finches feeding leisurely. The tide, almost at its height, lapped gently on the Humber flats, but the booming of breakers could be heard on the open seashore beyond the dunes. A cloud of passing waders called softly, Redshanks being prominent among them, but we noticed as they descended in undulating waves upon the shore that they were in the minority. Knots and Dunlin easily outnumbered them. A garden adjoining a pleasant cottage harboured a common Whitethroat, a clean, fresh-looking bird, and before we had progressed far, the abundance of Stonechats was noticeable. Skylarks rose on both sides, and we were glad to hear that two of our party had recorded a Dotterel on the shore. Bird-life almost too abundant for detailed observation was a welcome experience, and as M. and I walked along in the track of the Spurn railroad, picking our way through drifted sands, we saw two small birds perched on the shimmering surface of the rails. One was a Wheatear, the other. . . . Glasses were raised and eager fingers focused the lens, bringing into the range of vision a chubby little fellow somewhat like a sooty Robin. He flew along the track flirting a red tail and we called the rest of our party from the shore. "Black Redstart," we called and they came tumbling through the tangled marram to bear witness and enjoy a splendid view. The railway with its banked edges is an ideal spot for observation, and its cover enabled us to approach closely a number of Turnstones busy beach-combing among the seaweeds. The majority were in good plumage, but here and there a bird had assumed a mantle of a less warm brown.

All the Knots were grey and few of the hundreds of Dunlin showed traces of their breeding plumage.

Strings of Purple Sandpipers flew continually to and fro as fresh feeding grounds were exposed, their contrasting plumage easily distinguishing them from the other waders

DEC 17 1936

even at a distance. They looked at first glance like Redshanks in flight, but the back and wings were definitely pied where the Redshanks were light brown and white.

There was a glorious sky towards late afternoon with masses of white cloud through which the sunlight filtered on to the receding waters and over a vast expanse of wet sand. A bank of cloud drifting over the ocean formed a background for a squadron of Greater Black-backed Gulls approaching land. Above the ridge they came riding easily on the wind, to alight among a congregation of their kind over on a far distant arm of sand.

Three Shelduck lay sleeping far up the shore, apparently undisturbed by the clamouring of a horde of waders close at hand. Among this group we found four Grey Plover, bullet-headed and short billed, and a half-dozen Bar-tailed Godwits towering above the struggling masses of Dunlin and Ringed Plover. Sanderling were far from numerous and we found only two, dainty silvery and black creatures, running nimbly in and out among a stolid pack of dreamy looking Knots. A flight of Oyster Catchers came in from the far shore as we returned, followed by a distant Carrion Crow flapping low just above the skyline. He steered round in a current of air rising over the land and barked huskily at an inoffensive Curlew that crossed his line of flight.

We halted as a trio of small birds rose from the grass to alight again a few feet away. Hurrying on we found ourselves cautiously approaching three fine cock Siskins in lovely plumage.

Redwings were already in the thorn bushes calling 'Seep' as they swayed from slender stems. They were in beautiful condition, the eye stripe and russet flanks being most conspicuous in the sunlight.

From our elevated position we looked out over the sands, marvelling at the speed at which the tide receded, and our attention was arrested by a group of Black Duck feeding lazily in an extensive pool, but the glass revealed no white wing bar to identify them as being the rarer Velvet Scoter.

The sun was low by this time, and the warm, golden-flecked cloudlets riding high in the sky, turned slowly to a steely grey. The fading afternoon brought with it a chill reminder of the lateness of the season, bidding us hurry to our little wayside inn at Easington.

In the morning we again travelled the narrow cart road towards the sea. Stoppages were frequent. Kestrels hung on invisible threads from three different points, one close at hand being mobbed by Pipits and Larks. Small clouds of finches flying in undulating waves over the rough grass land, kept up a constant chorus, others rose from roadside pools

calling in unmistakable tones. The car stopped and we found that while the great majority were Linnets there were also Greenfinches, and both House and Tree Sparrows. The latter were beautifully clean and handsome, the black cheek spot and double bar being quite clearly observed. Skylarks were everywhere. Several were singing the full Spring song, in many cases from the ground. An attempt was made by B. and C. to photograph the vast flocks of waders and while they concerned themselves with their apparatus, M. and I set out to walk to the extreme point of Spurn Head. A naturalist can often set out with good intentions of reaching a certain place by a certain time, but it is a poor day if he succeeds in his effort. Barely had we reached the shore than we found ourselves walking away from instead of to the lighthouse. The reason was a Heron standing with hunched shoulders a few yards out on the flats. While approaching him, our way led over masses of shining white boulders and across breakwaters, the only cover to assist in our observation. Behind one of these boulders a Wheatear stood, a bright bird of upright carriage and distinctly large size. In recording the Greenland Wheatear we felt justified. It is a species which we annually welcome on our Yorkshire moorland reservoirs in May and Autumn.

The sun was shining from a glorious sky. It was perfect weather. Skylarks rose from our feet, here and there a Meadow Pipit or a twittering flock of Linnets, now a staid trio of Black-backed Gulls or a scintillating wave of Dunlins disappearing as though by magic over the vast estuary.

A flash of silver white and the Dunlin flock reappeared far out across the water to turn against the light and be lost again. Redwings scolded our approach and dashed with flopping flight to distant cover. Stonechats, and Whinchats, Wheatears and a Robin darted across our track. No sign of the sooty Black Redstart could we find ; the place where he was observed was tenanted by a lively party of rather tame Gold Crests, little bundles of yellow down more like thistle tufts than birds. Two parties of five duck fed in a pond a distance from the shore. Among them were three drakes with rusty red heads, but we were too far away to see the crown clearly. When they rose they displayed a prominent white patch on the wings. Wigeon ! A small flock of Siskins twittered overhead and Reed Buntings perched for a moment in full view, then descended to the undergrowth to flutter out and away as we approached. A cock Stonechat had a beakful of insects, an incident to create excitement had it been the breeding season. Very few shore birds had been seen, but the tide was as yet far out, so for a while we transferred our attention to the sea side of the headland.

The shore is steep here and the tide always seems to be in, but heavy breakers were of little use to the bird population and we saw nothing of waders. A school of Dolphins threaded its way up the coast line. Every few seconds some black shining bottle-nose would appear with graceful curve in the trough of the sea, to be engulfed a moment later by a following wave, and as we sat among the sand-hills watching this unexpected sideshow of nature we saw faintly, far out, a rather large ungainly bird flying strongly with that curious action reminiscent of a Razorbill in flight. This bird was as large as a Cormorant we thought, but the distance beat us and we were left wondering.

Returning to the rail track we walked ahead to the light-house noting the bird perches in position above and below the lantern, then on over more sandhills to the Point. A covey of Partridge rose and winged swiftly away down wind, passing at enormous speed as we scrambled among the buck-thorn to the shore below. The first Turnstones of the day were seen feeding at the edge of the tide, their bright orange legs showing quite plainly through the glass.

Some Purple Sandpipers came past to wheel in to the estuary where the tide was rapidly flowing towards the shore, and as we followed their line of flight the glasses rested upon an interesting sight. A Great Northern Diver was fishing close to the shore. We halted and he dived. We ran down the beach and lay still. Up came the Diver and looked round then sank suddenly. A large tree root served as an observation post. The glass was erected and a lens of large magnification employed, to be hastily focused when the bird reappeared : a fine bird in winter plumage. Several Dolphins weaved through the sea not far behind and a Common Seal—our first—reared his human-looking head to gaze at us. He came up a few seconds later eating quite a large fish then went back and brought another which he ate in two easy gulps. A bird flew by and alighted by the Diver, and we saw that this was another of the same species, though the plumage was in a different stage. What was most satisfying was the fact that here was the bird which we had seen out at sea, the large bird with the Razorbill flight. As it came to rest on the surface the body was bent, the short legs spread out and wide apart. At the last moment the neck curved and the breast extended, forming a bow which ploughed in to the spray for a considerable distance before coming to rest. While approaching the Divers and the Seal we had become so absorbed that we almost failed to notice a Turnstone feeding apparently unconcerned a few feet away, but when we did so the obstinate bird hurried along through the tidal rubbish in to the distance. We ate a belated lunch, a meal of sand

and sandwiches, with Seal and Dolphins for guests and a passing panorama of shipping to take our minds off the gritty repast. Even then it was only with difficulty that time tore us away from this enchanted spot to hasten towards the car. The few minutes we had been on the point was sufficient time to allow the tide to extend right up the river, and a shining sea covered what had previously been a vast expanse of mud. Strings of Purple Sandpipers still passed between the shore and the red Bull Lightship flying out and beyond a large congregation of Greater Black-backed Gulls assembled on their favourite promontory. The large Gulls rose but to our surprise and amazement, a huge cloud of Knots rose too, and from the same spot. We hadn't noticed the Knots at all and there must have been thousands. Large numbers of Dunlin with their Ringed Plover friends came to join the throng, to settle immediately we retreated to the cover of the dunes. Our forms against the skyline created a further disturbance and the flock rose like autumn leaves caught in an eddy of wind, thousand upon thousand of vibrating wings rising in unending stream, apparently from out of the earth. One bird only remained, a plump bird with warm buff breast. When it rose the length of wing caught the eye and the habit of repeatedly raising the wings above the head when on the shore was an action noted by others when watching the Dotterel. We could not stay longer, for we were already late and the sight of a number of black ducks, showing white below, sorely tempted us to stay. A hasty glance at them through the high powered glass failed to reveal their identity in the fading light, but we had a strong suspicion that they were Brent Geese. We reached the cottage where yesterday the Whitethroat called, and found our companions packing the hide tents. Too inquisitive visitors to the shore had spoiled their chances of bigger game and they had had to content themselves with a few shots of feeding Dunlin.

We returned and fed again in the comfortable inn, the car was started, and we wedged ourselves in to an impossibly small space between the apparatus and the baggage.

Bright headlights stabbed the darkness of the gathering October night and five satisfied naturalists headed for home.

G.R.E.

The Entomologist's Monthly Magazine for November contains ' The Ethiopian species of the *Fasciata* group of the genus *Bactria* (*Promachus*) (Diptera Asilidæ,' by B. M. Hobby (figures) ; ' A contribution towards a list of the aquatic coleoptera of Mid-Lancashire,' by F. Balfour-Browne ; ' Note on a specimen of *Psectra* (Neur.) taken by Dr. F. H. Haines in the New Forest,' by K. J. Morton (with plate and figures) ; ' A preliminary list of the Coleoptera of Windsor Forest,' by H. St J. K. Donisthorpe, and several shorter notes.

THE FUNGUS FORAY AT BUCKDEN, SEPTEMBER 5th to 9th, 1936

JOHN GRAINGER, WILLIS G. BRAMLEY AND GEORGE SHEARD

THE Mycological Committee of the Union held its Annual Meeting at Buckden from Saturday, September 5th, to Wednesday, September 9th. Although conditions appeared suitable, there was a scarcity of the larger species. Members had therefore to search assiduously for material, with the pleasing result that a relatively large number of rare and new species were collected.

The business meeting was held at the Buck Inn on Saturday, September 5th, with Mr. A. A. Pearson, Chairman of the Committee, presiding. Members stood in silent appreciation of the work of the late F. A. Mason. Mr. R. Fowler Jones, of Ilkley, was elected Chairman of the Committee for the ensuing year. Dr. John Grainger and Mr. W. G. Bramley were elected joint recorders, and Mr. G. F. Sheard to be Hon. Secretary. Mr. W. E. L. Wattam and Miss J. Grainger were also elected to the Committee.

Mr. A. A. Pearson, F.L.S., delivered his Chairman's Address of ' Problems of Classification in the Basidiomycetes.' He gave a short history of the various methods of classification, beginning with that of Fries, based on spore colour, through those of Patouillard, and Quélet, based upon internal and microscopic structure, to the modern ones of Rea and Maire.

Mr. T. Petch, B.A., B.Sc., spoke on ' British Hypocreaceæ,' and brought with him the completed manuscript of his critical study of this group. The publication of this paper, which has been prepared specially to help on the work of this Committee, is eagerly awaited.

A Public Exhibition of the fungi collected at the Foray was held in the Township Hall, Buckden, on Monday, September 7th. Mr. Pearson gave a short description of the exhibits, and there was a large attendance of the general public.

The district examined was the valley of the Wharfe, from Starbotton to Hubberholme and Cray. The woods at Water Ghyll and Kirk Ghyll were first visited. They were mostly of mixed type, with undergrowth dominated by *Mercurialis*. Areas of coniferous trees also occurred. The woods at Cray and Hubberholme were similar as regards the trees, but had an undergrowth of bracken.

Mr. T. Petch writes : One notable feature was the occurrence in large numbers of flies attacked by *Entomophthora sphærosperma* and *E. echinospora* in all the localities visited, chiefly on the undersides of nettle leaves, but also on Hazel and Sycamore. In Rais Wood, Hubberholme, under moss on vertical rock faces, *Torrubiella aranicida* Boud., a new record for Britain, was found on spiders, and also two

specimens of *Isaria exoleta* Fr. on lepidopterous pupæ. The first British example of the latter species was collected in July last by Mr. W. G. Bramley, at Steeton Whin, Tadcaster. A note on it appeared in *The Naturalist*, November, 1936, p. 250. Two rare species of *Hypomyces*, *H. broomeianus*, and *H. aureo-nitens* were collected, and the existence of another, *H. ochraceus*, was indicated by the presence of its chlamydospore stage.

The following description of *Astrosporina napipes* has kindly been furnished by Mr. A. A. Pearson, who has recently described it as a new British species :—

Astrosporina napipes (Lange) Pearson (= *Inocybe napipes* Lange in ' Studies in the Agarics of Denmark, III,' *Dansk Botanisk Arkiv.*, Bd. 2, Nr. 3).

Pileus 2½ to 5 cms., conical or expanded, with a conical umbo, brown or dark ferruginous, somewhat paler at the margin, fibrillose-rimose, the yellowish flesh showing beneath. Gills somewhat crowded, pale grey at first, turning brown with the spores, more or less ventricose, adnexed, edge minutely floccose. Stem 5 to 7 cms. long, fibrillose, pale above, brown or ferruginous below, with clearly-defined white bulbous base. Spores brown, 8-9 × 6-7 μ, angular, with conical protuberances. Cystidia fusoid, ventricose, muriculate at the apex, 50-60 × 13-18 μ. Habitat on moist ground in open space of pine woods, Hubberholme, Wharfedale, Yorkshire. Also to be found on boggy ground under Birch.

This species is probably not uncommon, but has been confused with *Astrosporina asterospora*, which has a pileus more definitely rimose, and star-shaped spores instead of the slightly elongate spores of the present species.

Stereum Karstenii Bres., which was established as a new British record from the previous Foray at Buckden in 1922, was found again this year. Mr. A. A. Pearson sent specimens of it to Miss E. M. Wakefield, of Kew, which enabled her to verify the extraordinary length of the cystidia. They penetrate right through the tissue, differing in length in accordance with the thickness of the specimen, 100 to 600 μ, usually projecting to about 25μ. The description of this species, as published in the *The Naturalist* for 1923 (p. 92), has been confirmed.

Species collected at the Foray include :

*=New to Yorks. †=New to V.C.64. ‡=New to Britain.

HYMENOMYCETES

AGARICACEÆ

Amanitopsis fulva (Schæff.) W. G. Sm.
Lepiota cristata (A. & S.) Fr.
L. granulosa (Batsch.) Fr.

Armillaria mellea (Vahl.) Fr.
Tricholoma rutilans (Schæff.) Fr.
T. imbricatum Fr.
T. personatum Fr.
Russula chloroides (Krombh.) Bres.
R. nigricans (Bull.) Fr.
R. cyanoxantha (Schæff.) Fr.
R. atropurpurea (Krombh.) Maire.
R. graminicolor (Secr.) Bres.
R. veternosa Fr.
R. ochroleuca (Pers.) Fr.
R. fragilis (Pers.) Fr.
Mycena galericulata (Scop.) Fr.
M. polygramma (Bull.) Fr.
M. ammoniaca Fr.
M. sanguinolenta (A. et S.) Fr.
M. galopus (Pers.) Fr. var. *nigra* Fl. Dan
M. epipterygia (Scop.) Fr.
M. stylobates (Pers.) Fr.
Collybia radicata (Relh.) Berk.
C. platyphylla (Pers.) Fr.
C. maculata (A. et S.) Fr.
Androsaceus rotula (Scop.) Pat.
A. androsaceus (Linn.) Pat.
Lactarius turpis (Weinm.) Fr.
L. blennius Fr.
L. flexuosus Fr.
L. pyrogalus (Bull.) Fr.
L. quietus Fr.
L. rufus (Scop.) Fr.
L. subdulcis (Pers.) Fr.
Hygrophorus cerasinus Berk.
H. pratensis (Pers.) Fr.
H. virgineus (Wulf.) Fr.
H. metapodius Fr.
**H. citrinus* Rea.
H. ceraceus (Wulf.) Fr.
H. coccineus (Schæff.) Fr.
H. calyptræformis Berk.
H. chlorophanus Fr.
H. psittacinus (Schæff.) Fr.
H. unguinosus Fr.
Clitocybe infundibuliformis (Schæff.) Fr.
**Laccaria laccata* (Scop.) B. et Br. var. proxima (Boud.) Maire.
Omphalia fibula (Bull.) Fr.
Entoloma Bloxamii Berk.
E. jubatum Fr.
Nolanea proletaria Fr.
N. cetrata Schroet.
Pholiota erebia Fr.
P. squarrosa (Müll.) Fr.
P. flammans Fr.
P. mycenoides Fr.
**Inocybe pallidipes* Ellis et Everh. *I. geophylla* (Sow.) Fr.
†*I. descissa* Fr.
†*I. deglubens* Fr.
I. rhodiola Bres.
‡*Astrosporina napipes* (Lange) Pearson.
Naucoria escharoides Fr.
Galera hypnorum (Schrank.) Fr.

Galera mycenopsis Fr.
Flammula sapinea Fr.
Cortinarius (Dermo.) *cinnamomeus* (Linn.) Fr.
Crepidotus mollis (Schæff.) Fr.
Psalliota arvensis (Schæff.) Fr.
Stropharia semiglobata (Batsch.) Fr.
Anellaria separata (Linn.) Karst.
Gomphidius glutinosus (Schæff.) Fr.
Hypholoma fasciculare (Huds.) Fr.
†*H. radicosum* Lange.
H. pyrotrichum (Holmsk.) Fr.
Panæolus campanulatus (Linn.) Fr.
P. papilionaceus (Bull.) Fr.
Psathyrella atomata Fr.
Psilocybe coprophila (Bull.) Fr.
P. foenisecii (Pers.) Fr.
Coprinus micaceus (Bull.) Fr.
Paxillus involutus (Batsch.) Fr.

BOLETACEÆ

Boletus elegans (Schum.) Fr.
Boletus chrysenteron (Bull.) Fr.

POLYPORACEÆ

Polyporus sulphureus (Bull.) Fr.
P. betulinus (Bull.) Fr.
P. fragilis Fr.
P. cæsius (Schrad.) Fr.
†*P. tephroleucus* Fr.
Polyporus chioneus Fr.
Fomes annosus Fr.
Poria hymenocystis B. et Br.
Trametes mollis (Sommerf.) Fr.
†*Merulius rufus* (Pers.) Fr.

HYDNACEÆ

†*Grandinia helvetica* (Pers.) Fr.
G. granulosa Fr.
Phylacteria terrestris (Ehrenb.) Big. et Guill.

THELEPHORACEÆ

Stereum rugosum (Pers.) Fr.
S. sanguinolentum (A. et S.) Fr.
S. hirsutum (Willd.) Fr.
Aleurodiscus amorphus (Pers.) Rabenh.
†*Corticium* (*Gloeocystidium*) *porosum* Berk. et Curt.
Peniophora subalutacea (Karst.) Von Hoehn. et Litsch.
P. velutina (DC) Cke.
P. hydnoides Cke. et Mass.
P. cinerea (Fr.) Cke.
P. quercina (Pers.) Cke.

CLAVARIACEÆ

Clavaria cinerea (Bull.) Fr.
C. corniculata (Schæff.) Fr.
Clavaria fusiformis (Sow.) Fr.

TREMELLACEÆ

Tremella frondosa Fr.
Tremella mesenterica (Retz.) Fr.

CALOCERACEÆ

Dacryomyces deliéuescens (Bull.) Duby.
Calocera viscosa (Pers.) Fr.
C. cornea (Batsch.) Fr.

LYCOPERDACEÆ

Lycoperdon pyriforme (Schæff.). Pers.

NIDULARIACEÆ

Crucibulum vulgare Tul.

PUCCINIACEÆ

Uromyces alchemillæ Lev.
Puccinia centaurea DC.
P. violæ DC.
P. obtegens Tul.
Puccinia chærophylli Purt. on *Myrrhis odorata.*
Pucciniastrum circææ Speg.

MELAMPSORACEÆ

Coleosporium petasites Lev.
Melampsora larici-epitea on *Salix caprea.* Kleb. emend. Fisch.

TILLETIACEÆ

Urocystis anemones Schroet. on *Ranunculus repens.*

ASCOMYCETES

GYMNOASCACEÆ

Arachniotus candidus Schroet.

ERYSIPHACEÆ

Erysiphe cichoracearum DC. on *Cicycium heterophyllum.*

PEZIZACEÆ

Galactina badia (Pers.) Boud.
†*Geopyxis cupularis* Sacc.
Lachnea scutellata Gill.

HUMARIACEÆ

Coprobia granulata (Bull.) Boud.

BULGARIACEÆ

Bulgaria inquinans (Pers.) Fr.

CIBORIACEÆ

Helotium claro-flavum Berk.
H. citrinum Fr.
†*Belonidium pruinosum* Mass.

LACHNELLACEÆ

Trichoscypha calycina (Schum.) Boud.

MOLLISIACEÆ

Mollisia cinerea (Batsch.) Fr.

PHACIDIACEÆ

Pseudopeziza trifolii (Biv.-Bern.) Fckl.
Stegia ilicis Fr.
Rhytizma acerinum (Pers.) Fr.

HYPOCREACEÆ

Hypomyces aureonitens Tul.
**H. broomeianus* Tul.
Nectria cinnabarina (Tode.) Fr.
N. coccinea (Pers.) Fr. on Ash.
**N. desmazierii* de Not. on Box.
Hyponectria buxi (Desm.) Sacc.
Hypocrea pulvinata Fckl.
‡*Torrubiella aranicida* Boud.

SPHÆRIACEÆ

Lasiosphæria rhacodium (Pers.) Ces. et de Not.

XYLARIACEÆ

Hypoxylon coccineum Bull.
H. rubiginosum (Pers.) Fr.
Xylaria polymorpha (Pers.) Grev.
X. hypoxylon (Linn.) Fr.

PHYCOMYCETES

Cystopus candidus (Pers.) deBary on Shepherd's Purse.
Plasmopara pusilla Schroet. on *Geranium pratense*.
Peronospora effusa Rab. on *Chenopodium bonus-henricus*.
Entomophthora sphærosperma Fres. on flies.
E. aphidis Hoff. on aphis.
E. dipterigena Thaxt. on flies.
E. echinospora Thaxt. on flies.
E. variabilis Thaxt. on flies.
E. americana Thaxt. on flies.
E. muscivora Schroet. on flies.
E. richteri (Bres. et Star.) Bubak on fly.

FUNGI IMPERFECTI

**Phoma stictica* B. et Br. on Box.
**Phomopsis conorum* (Sacc.) Died. on cone of *Pinus sylvestris*.
Pseudopatellina conigena (Niessl.) v. H. on cone of *Pinus sylvestris*.
Colletotrichum liliacearum (West) Duke.
Ramularia urticæ Ces.
Oidium sp. on Michaelmas Daisy.
Monilia aurea (Link.) Gmel.
**Oospora microsperma* (B. et Br.) Sacc. et Vogl. on cone of Spruce.
Cephalosporium verticicolum Petch on *Comatricha typhoides*.
C. muscarium Petch on spider cocoon.
Gliocladium penicillioides Cda. on *Stereum*.
Beauveria bassiana (Bals.) Vuill. on pupa.
**Botryosporium pyramidale* Cost. on *Mercurialis*.
Blastotrichum puccinioides Preuss. on decaying agaric.
Isaria umbrina Pers.
I. farinosa (Holms.) Fr. on pupæ, fly, spider cocoon.
‡*I. exoleta* Fr. on lepidopterous pupæ.P
Hirsutella eleutheratorum (Nees.) Petch on beetle larva.
Hymenostilbe muscaria Petch on flies.
Gibellula aranearum (Schw.) Syd. on spiders.
Volutella buxi (Cda.) Berk.
Epidochium xylariæ v. H. on *Xylaria hypoxylon*.

MYXOMYCETES

Ceratiomyxa fruticulosa Macbr.
Fuligo septica Gmel.
Physarum nutans Pers.
P. viride Pers.
Stemonitis splendens Rost.
Comatricha nigra Schroet.
C. typhoides Rost.
Cribraria rufa Rost.
Lycogala epidendrum Fr.
Trichia affinis deBary.
T. scabra Rost.
T. varia Pers.
T. decipiens Macbr.
Arcyria cinerea Pers.
A. pomiformis Rost.
A. incarnata Pers.
A. nutans Grev.

In conclusion we gratefully express our thanks to Mr. T. Petch and to Mr. A. A. Pearson for their help in preparing this report.

RECORDS

THE following are additional fungi for the Pocklington excursion, most of which have been determined by E. W. Mason :—

Gibberella pulicaris (Fz.) Sacc.
Diatrype disciformis (Hoffm.) Fz.
Chætosphæria phædstroma (Mont.) Sacc.
Calyculdsphæria tristis (Fclk.) Fitzp.
Eutypha flavo-virens (Fz.) Tul.
Durella compressa Tul.
Scleroderris frangulæ Mass.

W. G. BRAMLEY.

THE WHITE-LETTER HAIRSTREAK BUTTERFLY IN EAST YORKSHIRE

THERE seem to be few records of *Strymon w-album* Knoch. for this district. Mr. A. S. Tetley in the manuscript records of the Scarborough Field Naturalists' Society gives Sleightholmdale, and Mr. T. Hyde-Parker, of Reighton, *in litt.*, tells me that he found a specimen drowned in a water-butt there this year. In June I found the larvæ fairly common on wych-elm near Sinnington.—GEO. B. WALSH, Scarborough.

SYCAMORE SEEDLINGS IN GOYDEN POT

THE following record will, perhaps, be of some interest. A pupil of mine, G. Spenceley, brought me six seedlings, clearly sycamore, on the 10th October, from Goyden Pot. They were found growing on the sandy floor of the cave, 1,200 yards from the entrance and, of course, in the complete absence of light. The temperature is 45° F., winter and summer.—H. BARNES.

REVIEWS AND BOOK NOTICES

The Student's Manual of Microscopic Technique, by **J. Carroll Tobias.** 10/6 net. Chapman and Hall, Ltd., London. This is an American publication. It is primarily designed to help the student in the preparation of material for examination through the microscope. There is an excellent chapter on killing, fixing, and preserving ; the formulæ given are not unknown ; some of them have been used by microscopists for generations ; but the information added as to procedure, will prove extraordinarily helpful to the beginner, and will steer him clear of little pitfalls that hinder and annoy, and provoke the blasphemous word. The section on the preparation of animal and vegetable material is the issue of a ripe experience, and will be of service to the expert as to the tyro. Perhaps the most serviceable chapter is that on photomicrography, with its valuable hints on the use of filters ; the photograph illustrations carry conviction as to the worth of the advice tendered, and the methods used. The introductory sections on the microscope itself, and the forms of life that may be collected from water, are thin, and less satisfactory than the rest of the book. To refer to *Volvox globator* as a 'beautiful little animal,' that multiplies freely

in an aquarium ; and to include it among 'Infusoria,' shakes our confidence in the knowledge of the author. But on the whole, little of that kind of disturbing element is given in the book. The format is pleasing ; wide margins to the pages, and illustrations that almost entirely are well and carefully reproduced with little in the way of misprint—but should not *Stentor molymorphus* be *S. polymorphus* !—lend a bias to our judgment, and help us to praise the work as a competent guide to the technique of work with the microscope. But the title of the book stimulates a question, 'What is *microscopic* technique ?' It reminds one of the usual advertisement 'a musical evening,' when what is meant is a 'concert of music,' which may or may not be 'musical !' —W. Lawrence Schroeder.

The Gods Had Wings, by **W. J. Brown,** with woodcuts by **John Farleigh,** pp. viii+316. Constable, 7/6. There are few books dealing exclusively with bird lore and legend, and Mr. Brown has done a useful service in bringing together a vast amount of most interesting information relating to this subject. The book is a delight from cover to cover. Open it anywhere and you strike some entertaining account of old superstitions and the reader must be well up in such matters if he does not learn many new things. Of course the Nightjar has a page, but Mr. Brown in reminding us of the former belief that it sucked goats does not mention that this belief appears to be common all over Europe, judging from the local names of the species. The illustrative woodcuts by Mr. Farleigh are very fine indeed.

Under the Heavens, by **H. W. ("Bunny") Austin,** pp. 128, and with 8 black and white illustrations. Chapman & Hall, 3/6. There is no valid reason for being surprised that a world-renowned lawn tennis player is also a naturalist. Mr. Austin writes in an engaging manner and knows what he is talking about. A life-long interest in wild life, with plenty of opportunity for first-hand observations provide material for six very pleasant chapters whose titles range from April to September. Birds predominate, and there are some good descriptions of songs and cries. It is all very pleasant reading.

NEWS FROM THE MAGAZINES

The Manchester Geological Association, like many similar societies, is finding the cost of printing a difficulty, but it has just published a summary of its proceedings for the years 1929 to 1932, in its *Journal,* Volume I, Part III, under the editorship of E. Royce. The publication also includes the Presidential Address of W. B. Wright, on 'The Theory of the Tethys and Some Other Speculations' ; 'The Lower Carboniferous Succession in the Wye Valley Region of North Derbyshire,' by F. Wolverson Cope ; 'The Genus Gastrioceras occurring in the Lower Coal Measures of the Lancashire Coalfield,' by R. M. Chalmers ; and 'The Bowland Shales from Pendle to Dinckley,' by

The Entomologist for November contains 'The Life History of *Lampropteryx otregiata* Metcalfe,' by E. A. Cockayne (with Plate) ; 'An arrangement for preventing larvæ from spinning their cocoons on top of the cocoons of others,' by G. A. Brett ; 'Migration Records, 1936,' by Capt. T. Dannreuther (*Pieris brassicæ* and *Plusia gamma* at Mablethorpe, *Vanessa atalanta* very common in Yorkshire about August 25th and common at Blackpool, where also occurred *Aglais urticæ, Vanessa cardui* and *Plusia gamma, Plusia gamma* common at Scarborough in September. During the first week in August the larvæ began to attack sugar beet in Lincolnshire and Leicestershire. Nottingham, Rutland, and South Derby also affected) ; 'Notes on Mr. A. M. Peake's paper on the distribution of the European species of the genus *Melanargia,*' by W. G. Sheldon and several notes and observations.

SONGS OF WILD BIRDS [1]

W. R. GRIST, B.Sc.

All serious ornithologists of to-day realise that a study of the sounds made by birds is an important part of their subject. Whatever may be the biological significance of bird-songs and cries, some associated facts stand out very plainly. Birds as a whole have only a very slight sense of smell. Small birds are easily concealed in the foliage of trees and hedges, and some method of communicating by sound appears to be essential. Small, insignificantly-coloured birds produce volumes of sound out of all proportion to their size.

The characteristic cries of some of the larger species are very well known, but it is quite a common thing to meet a really good naturalist whose knowledge of the songs of the smaller birds is quite vague. This is not hard to understand. The older books about birds treated this subject very sketchily, and some authors made no mention of bird-song at all. With the development of a more scientific outlook among ornithologists bird sounds have come in for a great deal of attention, and many writers in the last few years have tried to put down on paper descriptions of the songs which would enable the beginner to recognise them in the field. Realising that identification depends upon a knowledge of the ' rhythm ' rather than the musical intervals involved, attempts have been made to render songs by means of strings of words or syllables, on the lines of the well-known ' Little bit of bread and *no* cheese ' for the Yellowhammer, and ' Quick, quick, quick, come kiss me, my pretty little dear ' for the Chaffinch. Another praiseworthy experiment in notation was that in which notes of varying length, accent, and pitch were represented by a system of dots and dashes. But what the beginner really wants is the actual song itself and all by itself, and at last he has got it. Mr. Nicholson's discussion of the subject in the book under review is the best we have ever read. His chapter headings are ' What is Bird-Song ? ' ' Why do Birds Sing ? ' ' Garden Birds and Their Songs,' ' How to Recognise British Bird-Songs,' ' The Appreciation of Bird-Song.' The two 10-in. records which accompany the book are the outcome of the brilliant work of Mr. Ludwig Koch, who had previously elaborated a method of recording the songs of *wild* birds in their own haunts. No less than 15 species are dealt with, and it is now possible to make a leisurely comparison of the songs of the Chaffinch and Willow Warbler, Blackbird and Song Thrush, etc., etc., and Mr. Koch has actually caught the ' Yaffle ' of the Green Woodpecker and the tapping of the Great-spotted Woodpecker. The appendix of the book contains detailed ' time-tables ' of all the records, and the student may sit at home and learn a dozen or so of the commonest songs. Armed with this knowledge he will soon be able to recognise the same songs in the field. The man who knows a dozen songs will soon learn all the rest without the aid of gramophone records. All the same we sincerely trust that Messrs. Nicholson and Koch will make many more records and give us, in time, the cries of the Waders, and the songs of Blackcap and Garden Warbler. *Songs of Wild Birds* is an epoch-making book and is appropriately published by Messrs. Witherby, who have done so much in the last thirty years to further the science of ornithology.

In *The London and North Eastern Railway Magazine* for October, is a note on a glacially striated surface at Hulands, between Darlington and Tebay, with illustration.

---

[1] *Songs of Wild Birds*, by E. M. Nicholson and Ludwig Koch, pp. xxxii+216. Eight colour and black and white plates, with two double-sided gramophone records of bird-songs. Complete 15/-. Published by H. F. & G. Witherby, London.

YORKSHIRE NATURALISTS' UNION: VERTEBRATE ZOOLOGY SECTION

E. WILFRED TAYLOR

A MEETING of the Vertebrate Section of the Yorkshire Naturalists' Union was held in the library of the Church Institute, Leeds, on Saturday, October 17th, Alderman A. Hirst occupying the Chair.

The Sectional Meeting was preceeded by meetings of the Yorkshire Wild Birds and Eggs Protection Acts Committee and of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee.

At the Sectional Meeting the Minutes of the previous meeting were read and approved, as also were the annual reports of the Divisional Officers of the North, East and West Ridings and of the York District. The Divisional Officers were Messrs. W. J. Clarke, C. W. Mason, H. B. Booth, and S. H. Smith.

The General and Financial Reports of the Yorkshire Wild Birds and Eggs Protection Acts Committee and of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee were read and approved.

Mr. C. W. Mason was elected President of the Section for 1937 and Miss E. Gallwey was appointed Convener to the Mammals Committee.

At the evening meeting, Mr. W. R. Grist played two recently-produced gramophone records, obtainable from H. F. & G. Witherby, Ltd. They are entitled ' Songs of Wild Birds ' and record the songs of fifteen species of British birds.

Mr. J. P. Utley reported the visits of a bird to his lawn in Upper Wharfedale last January. He noted particularly the conspicuous black markings on the breasts, the rufous wing feathers, coverts and axillaries and a stripe over the eye. He believed the bird to have been an example of the Dusky Thrush (*Turdus eunomus* Temm.).

Mr. R. Chislett gave an illustrated paper entitled ' Notes on a Dartford Warber and on a Yorkshire Great-crested Grebe,' and described a visit to a haunt of the Dartford Warbler in the South of England. On arrival it was found that most of the gorse and heather had been burned, but a pair of birds was definitely located.

This species is rather skulking in its habits and the call-note resembles the chir—r—r of the Whitethroat but is more subdued and in a different key. Later a second pair was located on the same heath, but the young had already left the nest.

A neighbouring heath was explored and a third pair of birds was located and a nest found in the dusk, which proved next day to be that of a Linnet. However, the Dartford Warblers continued to call close at hand and a nest containing young was found well below the surface of knee-deep gorse. Later on the nest of a fourth pair was found.

The grey and brown of the back, the gipsy maroon of the cock's breast, and the brilliant orange red ring which encircles the eye can only be properly appreciated when seen from close quarters. The bird resembles a Wren except for the long loosely-hinged tail, but is less neat in appearance and more shaggy. The tail is held in all positions and with crest erected and tail held at right-angles the cock deserves the name of ' furze sprite ' as he flits about the gorse. The song was not striking but included snatches of the refrains of the Whitethroat, Hedge Sparrow, and Stonechat.

The food consisted of flies and small green caterpillars which both birds brought to the nest. They rarely arrived together and the coming of the one was generally a signal for the other to depart. Many photographic studies were obtained by focussing favoured sprays of gorse, but this generally caused them to move to another.

Finally a visit was paid to a heath on which the late W. H. Hudson had found this species and the lecturer was delighted to discover that the Dartford Warbler still nested there.

Photographs were also shown of a pair of Yorkshire Great-crested Grebes, and the lecturer was successful in photographically recording phases of the nuptial display so characteristic of this species.

Mr. R. Woods next gave an illustrated paper entitled ' Bird Hunting with a Tramp ' in which he humorously described visits paid to a part of the Solway Firth and to the Bass Rock. On both occasions he was accompanied by the Tramp, a personality well known to ' listeners in,' and the expeditions were of a spontaneous nature, advantage being taken of any accommodation that offered. Thus a fisherman's wooden hut supplied shelter and a few eggs and a few rabbit snares solved the catering problem.

The lecturer described himself as an art photographer first and a naturalist second, and the photographs of the Oyster Catcher and the Common Gull, secured on the Solway, were most pictorial.

The visit to the Bass Rock appeared to be due to the mistaken belief that a natural spring of a famous beverage was located there—hence the name !

A series of very fine photographs of the Gannets at and around their nests was shown and incidents such as the stealing of nesting material during the absence of the owner and the ' smash and grab ' raids carried out by the Black-backed Gulls were well shown.

An excellent series of photographs of Guillemots and Kittiwakes was obtained from an open boat and the lecturer concluded a very entertaining paper by paying a tribute to the lighthouse attendants with whom he and the Tramp lived for a time.

Mr. G. R. Edwards read a paper entitled ' Filming the Rook ' and described the taking of a census of all the local Rookeries and the final discovery of a few nests that could be photographed from the roof of a neighbouring textile mill. This entailed a long climb up a tower and a perilous steeplechase along the roofs of the building, but resulted in a film which showed first the naked branches of the trees and the nest-building operations, followed by the budding of the trees and the hatching of the young, until finally little could be seen of the fledged young owing to the concealment offered by the now full-grown leaves.

A second length of film illustrated the ascent of Braeriach in the Cairngorm mountains *via* the forest of Rothiemurchus. *En route* studies were made of the Red Squirrel and the Sandpiper, followed by the Crested Tit, Tree Creeper, Dunlin, and Crossbill. The photographs of the wild scenery, the beautiful cloud effects, and the great snowfields at the summit were very beautiful.

Finally Mr. W. Bennett showed a length of film obtained on the island of Grassholme off the Pembrokeshire Coast. It dealt with the Gannet colony, Manx Shearwaters, Puffins, and Black-backed Gulls.

Finally a vote of thanks to the lecturers and the lanternists was passed and carried unanimously.

R. Kay Gresswell records some Rock Borings in the Society's Area, in the *Thirtieth Report of the Southport Scientific Society.*

Doncaster have started issuing Museum Publications, No. 1 of which is entitled ' Excavations on Sutton Common, 1933, 1934 and 1935,' by C. E. Whiting, reprinted from *The Yorkshire Archæological Society's Journal*, Part 129. It is well illustrated, and sold at 6d.

The Entomologist's Record for October contains ' Marked migrant butterflies,' by T. B. Fletcher ; ' *Lysandra corona*, a new " blue " from Persia,' by R. Verity ; ' Andrei Petrovich Semenov-Tian-Shansky,' by M. Burr ; ' Effects of alimentation on the development of some Pierinæ,' by O. Querci ; ' Random notes on Argentine collecting. 2, An unproductive winter expedition,' by K. J. Hayward ; ' Notes on collecting, etc.,' and supplements ; ' The British Noctuæ and their varieties,' by H. J. Turner ; and ' More notes on early stages of Syrian Lepidoptera,' by E. P. Wiltshire.

The Naturalist

CLASSIFIED INDEX

COMPILED BY W. E. L. WATTAM

It is not an index in the strictest sense of that term, but it is a classified summary of the contents of the volume, arranged so as to be of assistance to active scientific investigators ; the actual titles of papers not always being regarded so much as the essential nature of their contents.

CONTRIBUTORS

Barnes, Harold, B.Sc., B.A., 201-203, 276
Barnes, M. D., 85-86, 186, 214
Bayford, E. G., F.R.E.S., 191
Bedford, Dr. T. H. B., 67, 130, 183-184, 229-230
Bentham, H. E. (Appendix) Circ. IV
Bevan, D. W. (Appendix) Circ. IV, 200
Bloch, Robert, 193-199
Booth, H. B., F.Z.S., M.B.O.U., 15-18, 115, 199, 204
Bramley, W. G., 8-11, 36-37, 163, 187-188, 190, 213, 270-275, 276
Brighton, A. G., M.A., 169-172
Britten, H., 73-81, 116, 141, 161, 203, 221-227
Brown, J. M., B.Sc., F.L.S., F.R.E.S., 40-41, 61, 62-64, 135-139 (Appendix) Circ. II, 178-179, 181-182, 231, 237-239, 252
Burrell, W. H., B.Sc., 65, 207
Butterfield, J. A., M.Sc., F.G.S., 66, 67
Butterfield, R., F.R.E.S., 43
Butcher, R. W., PH.D., B.Sc., F.L.S., 241-249

Cheetham, C. A., 12, 14-24, 36-48, 104, 129, 152, 156, 161-164 (Appendix) Circs. I to VII, 176, 180-188, 189-192, 208, 208-209, 210-211, 234-240, 262-263
Chislett, Ralph, F.R.P.S., M.B.O.U., 7, 118, 140
Clapham, Phyllis M., B.Sc., 253-259
Clarke, W. J., F.Z.S., 18-20, 38, 116-118 (Appendix) Circ. IV, 252
Cowin, W. S., 87-88

Davey, John D., 201-203
Dewberry, E. B., M.R.I.P.H., M.R.SAN.I., 97-104, 121-129
Dibb, John R., F.R.E.S., 41-42

Edwards, G. R., 25-30, 265-269

Falconer, W., F.R.E.S., 221-227
Flintoff, R. J., F.L.S., F.Z.S., 206
Fordham, W. J., M.R.C.S., L.R.C.P., D.P.H., 31-33, 42, 132, 165-167 (Appendix) Circs. II, V
Fortune, R., F.Z.S. (Appendix) Circ. III
Foster, H., 161

Gallwey, Miss E. (Appendix) Circ. I
Gilligan, Prof. A., D.Sc., F.G.S., M.I.M.E., 157-160
Grainger, J., PH.D., B.Sc., 8-11, 70-71, 187-188 (Appendix) Circ. VI, 270-275
Gray, R. W., 145-157
Greaves, W., 161
Grist, W. R., B.Sc., 233, 278

Hardy, Eric, F.Z.S., 6-7, 49-52, 251-252
Head, H. W. (Appendix) Circ. IV
Hilary, Miss D., B.Sc., 46-48
Hincks, W. D., M.P.S., F.R.E.S., 191-192
Hyde, G. E., 4-5

Jeffries, Rev. T. A., M.Sc., F.L.S. (Appendix) Circ. I
Jones, H. P., F.R.E.S., 139

Kaye, Alfred, (Appendix) Circ. I

Marriner, T. F., 93-94
Mason, C. W., 18
Milsom, F. E., B.Sc., 70, 164, 190
Mobbs, R. H., 241-249
Morehouse, Mrs. E. M., 38-40, 186-187, 190-191
Murray, James, 82, 227

CONTRIBUTORS—*continued*

Oldroyd, Mabel, B.Sc., 253-259

Palmer, L. S., 89
Parker, T. Hyde-, 140, 231
Pearce, Rev. E. J., M.A., F.R.E.S., 66, 141
Perry, R., 105-110
Petch, T., B.Sc., 57-60, 130, 234-237, 250-251
Pearsall, W. H., D.Sc., F.L.S., 133-134, 204, 205-206, 208
Procter, C. F., 23-24, (Appendix) Circ. V

Raistrick, Dr. A., F.G.S., M.I.MIN.E., 111-115
Roberts, T. N., (Appendix) Circ. IV

Schroeder, Rev. W. L., M.A., 1, 60-61, 228-229
Sheard, George, 270-275
Sheppard, Thos., M.Sc., F.G.S., F.Z.S., 3, 12-13, 34, 90-92, 259, 260-262
Sledge, W. A., PH.D., B.Sc., 48, 161, (Appendix) Circ. II, 182, 189, 211, 217-219, 231-232, 233
Smith, A. M., M.A., 173-176, 177-178
Smith, S. H., J.P., F.Z.S., 20-22, 37, 86
Snowdon, F., 232-233
Stainforth, T., B.A., B.Sc., (Appendix) Circ. V
Stubbs, F. B., 164

Taylor, E. W., 68-69, 279-288
Thomas, Miss Ivy, 210

Utley, John P., 142, 180-181, 189, 219-220

Versey, H. C., D.Sc., F.G.S., (Appendix) Circ. V

Walsh, G. B., B.Sc., 83-84, 165-167, (Appendix) Circ. IV, 210-211, 276
Wallis, E. A., (Appendix) Circ. IV
Ward, J. H., 153-156
Wattam, W. E. L., 55-56, 65, 66, (Appendix) Circs. I, II, 131-132, 162-163, 184-186
Woodhead, T. W., PH.D., M.Sc., F.L.S., (Appendix) Circ. I

BOOK NOTICES

BIRDS

Joy, N. H.—How to know British Birds, 118
Lockley, R. M.—Birds Around London, 118
McWilliam, J. M.—Birds of the Firth of Clyde, 119
Nicholson, E. M. and Koch, L.—Songs of Wild Birds, 278
Rintoul, L. J. and Baxter, E. V.—Vertebrate Fauna of Forth, 35
Thompson, D. F.—Birds of Cape York Peninsula, 167

FLOWERING PLANTS

Herbs, 95
Holbrook, A. W.—British Trees, 192
Hyde, H. A.—Welsh Timber Trees, 95
Leach, Wm.—Practical Botany, 13
Scott, T. H. and Stokoe, W. J.—Wild Flowers, 192
Swingle, D. B.—Plant Life, 13

FISHES

Menzies, W. J. N.—Sea Trout and Trout, 143
Morgan, A.—Tropical Fishes and Home Aquaria, 119
Sea Fish Commission Reports, 143, 214

FUNGI

Smith, K. M., Plant Viruses, 94

GEOLOGY

British Museum Guide, 168
British Regional Geology Handbooks, 35
Earle, K. W.—The Geological Map, 168

LEPIDOPTERA

British Immigrant Butterflies and Moths, 168
Shackelford, S.—Now for Creatures ! 167

BOOK NOTICES—*continued*

MAMMALIA

Fyleman, Rose.—Monkeys, 168
Giles, Sir C. T.—Skill with Rod and Gun, 263
Jearey, B. F.—Pride of Lions, 168
Lang, Lt.-Col. Cecil.—Boda the Buffalo, 263
Needham, J. G.—The Animal World, 215

SOCIETIES REPORTS, TRANSACTIONS, etc.

Ray.—Monograph of British Neuroptera, Vol. I, 178-179

MISCELLANEOUS

Austin, H. W.—Under the Heavens, 277
Blanchard, R. and Crist, R. E.—A Geography of Europe, 94
Brown, W. J.—The Gods had Wings, 277
Calkins, G. N.—Smallest Living Things, 215
Calvert, W. R.—Passions of the Wild, 143
Calman, W. T.—Marine Boring Animals, 215
Crump, W. B.—Wool Textile Industry of the Pennines in its Physical Setting, Part I, 95
Fenn, L. A.—Biology To-day, 192
Grainger, J., PH.D., B.SC.—Garden Science, 35
Kelway, P.—Hedge Folk in Twilight, 143
Jerram, M. R. K.—Forest Management, 13
Lumby, J. R.—Salinity, etc., of the English Channel, 96
Miles, H. W. and M.—Insect Pests of Glass-Houses, 95
McInerny, A. J.—The Role of the Deserts, 69
Peattie, D. R.—An Almanac for Moderns, 263; A Salute to John James Audubon, 263
Tobias, J. C.—Microscopic Technique, 276
Wenter, J.—Man's Delight, 94
Williamson, H.—Nature in Britain, 230; Anthology of Modern Nature Writing, 230
Willmer, E. N.—Tissue Culture, 94
Wood, Lt.-Col. H. S.—Wild Life of Assam, 119

ILLUSTRATIONS

BOTANY

Araucaria imbricata Pavon, Leaves of, 195, 197
Sycamore Branching, 202

GEOLOGY

Elephant's Tusk found at Brandesburton, 3
Uintacrinus from the English Chalk, 169, 171

FISH

The Common Herring (*Clupea harengus* Linn.), 99, 101, 123, 125

HYMENOPTERA

Bee Nest in Gooseberry Bush, 200

MAMMALIA

Elephant's Tusk found at Brandesburton, 3

PORTRAITS, VIEWS, AND GROUPS

Kendall, Percy Fry, D.SC., F.R.S., 157
Mason, F. A., F.R.M.S., 133-134
Pawson, Albert H., J.P., F.L.S., F.G.S., 90
Y.N.U. Presidents, 1930-1936, Plate I

SPECIES AND VARIETIES NEW TO SCIENCE BROUGHT FORWARD IN THIS VOLUME

Fungi.—Sphæroderma fusisporum Petch, n. sp. at Saltaire, Oospora trichiæ Petch, n. sp. at Burnsall, Spicaria simplex Petch, n. sp. at Helmsley, and Hirsutella aphidis Petch, n. sp. at Aldbrough, fully described, T. Petch, 58-60

SPECIES AND VARIETIES NEW TO BRITAIN BROUGHT FORWARD IN THIS VOLUME

Fungi.—Rosellinia callosa Wint. at Grimston, fully described, T. Petch, 58 ; Sphæroderma fusisporum Petch n. sp. at Saltaire, Oospora trichiæ Petch, n. sp. at Burnsall, Spicaria simplex Petch, n. sp. at Helmsley, and Hirsutella aphidis Petch, n. sp. at Aldbrough, fully described, T. Petch, 58-60

Torrubiella aranicida Boud. and Astrosporina napipes (Lange), Pearson at Buckden, fully described, T. Petch and A. A. Pearson, 270-271

COUNTIES

CHESHIRE

Birds.—Ornithology of the Liverpool Area, 1935, E. Hardy, 49-52

Mosses and Hepatics.—Tetraphis Browniana Records, T. H. B. Bedford, 130

CUMBERLAND

Coleoptera.—County records, J. Murray, 82

Diptera.—County records, J. Murray, 227

DERBYSHIRE

Fungi.—Morchella vulgaris (Pers.) at Via Gellia, near Cromford, J. M. Brown, 231

Heteroptera.—Elasmostethus interstinctus L., near Dore, J. M. Brown, 252

Trichoptera.—County List, J. M. Brown, 62-64

ISLE OF MAN

Birds.—Island Records of the Barn Owl, W. S. Cowin, 87-88

LANCASHIRE

Algae.—Uncommon Algæ in the Lake District, W. H. Pearsall, 205-206

Birds.—Ornithology of the Liverpool Area, 1935, E. Hardy, 49-52 ; Rook Roosts in the Manchester Area, J. H. Ward, 153-156 ; Scaup summering at Liverpool, E. Hardy, 251 ; Lesser Black-Back Gull nesting in South Lancs., E. Hardy, 251-252

LINCOLNSHIRE

Geology.—The Coat of Arms of the Borough of Scunthorpe, T. Sheppard, 259

YORKSHIRE

Algae.—Species noted at Drop Clough, F. B. Stubbs, 164 ; Coleochaete orbicularis Pringsh, at Doncaster, A. M. Smith, 176

Arachnida.—Records for the Whitby District, H. Britten and W. Falconer, 221-227

Biology (Freshwater).—Species noted at Hawes, J. M. Brown, 181-182

Birds.—Grey Phalarope near Greenfield, R. Chislett, 7 ; at Morley, T. H. B. Bedford, 67 ; Y.N.U. Zoological Section Reports, 1935, H. B. Booth, C. W. Mason, W. J. Clarke, S. H. Smith, C. F. Procter, 15-24; Autumn Migration on the Yorkshire Reservoirs, G. R. Edwards, 25-30 ; Correction note thereon, W. Greaves, 161 ; Vertebrate Zoology Section Reports, E. W. Taylor, 68-69, 279-280 ; Circular Notes (Appendix), Drop Clough, W. E. L. Wattam and A. Kaye ; Aberford, R. Fortune ; Hackness, T. N. Roberts ; Pocklington, C. F. Procter ; Road Death-roll of Birds, M. D. Barnes, 85-86 ; Bittern at York, S. H. Smith, 86 ; Redwing and Chiff-Chaff at Tickhill, R. Chislett, 118 ; Red-legged Partridge near Scarborough, W. J. Clarke, 117 ; County Records, R. Chislett, 140 ; Pied Flycatcher in E. Yorks., T. Hyde-Parker, 140 ; Wensleydale Records,

YORKSHIRE—*continued*

J. P. Utley, 141-142, 219; Waxwings in Whitby District, F. Snowdon, 232-233; A Note on the Dipper, W. R. Grist, 233; Species noted at Drop Clough, F. B. Stubbs, 164; at Hawes, J. P. Utley, 180-181; at Aberford, J. P. Utley, 189; Bird-Watching on Spurn Head, G. R. Edwards, 265-269

Coleoptera.—County Records, 1935, W. J. Fordham, 31-33; Y.N.U. Sectional Report, 1935, W. J. Fordham, 42; County Haliphid Records, E. J. Pearce, 66,140; Beetles of Whitby and District, H. Britten, 73-81,116,161; County Records, W. J. Fordham and G. B. Walsh, 165-167; Circular Notes (Appendix), Hawes (W. J. Fordham), Hackness (G. B. Walsh), Pocklington (W. J. Fordham); Species notes at Hawes, M. D. Barnes, 186, 214; at Aberford, W. L. Hincks and E. G. Bayford, 191; at Hackness, G. B. Walsh, 210-211

Collembola.—Swarms at Sheffield, J. M. Brown, 252

Crustacea.—Crayfish at Leeds, J. A. Butterfield, 66

Diptera.—Y.N.U. Sectional Report, 1935, C. A. Cheetham, 42-43; Early Diptera, C. A. Cheetham, 129; Entomological Jacobites, W. J. Fordham, 132; Species noted at Drop Clough, C. A. Cheetham, 162; at Hawes, C. A. Cheetham, 182; at Aberford, C. A. Cheetham and W. D. Hincks, 192; at Hackness, C. A. Cheetham, 210; at Pocklington, C. A. Cheetham, 239-240; County Records for 1936, C. A. Cheetham, 209; Circular Notes (Appendix), Pocklington (W. J. Fordham)

Decapoda.—Ommastrephes sagittatus at Scarborough, W. J. Clarke, 117

Ephemeroptera.—Y.N.U. Sectional Report, 1935, J. R. Dibb, 41-42; Species noted at Aberford, W. D. Hincks, 192; at Pocklington, J. M. Brown, 239

Equisetaceae.—Equisetum variegatum Schl. on Malham Moor, W. A. Sledge, 232

Fish.—Y.N.U. Sectional Report, 1935, S. H. Smith and W. J. Clarke, 37-38; Uncommon Fishes at Scarborough, W. J. Clarke, 116-117; Circular Notes (Appendix), Aberford (R. Fortune); Trout in Douk Cave, Ingleborough, H. B. Booth, 204

Flowering Plants.—Y.N.U. Sectional Reports, 1935, C. A. Cheetham, D. Hilary, W. A. Sledge, 44-48; The Ida M. Roper Herbarium at Leeds University, W. H. Burrell, 65; Mimulus moschatus Dougl. at Farnley, W. E. L. Wattam, 65; Fruiting Age of the Oak, W. E. L. Wattam, 66; Results of Fire on Seamer Moor, G. B. Walsh, 83-84; Blossoming Records of Saxifrage oppositifolia and Hutchinsia petræa, C. A. Cheetham, 84; Frost Effects on Flowering Plants, C. A. Cheetham, 156; Myosurus minimus L. at Aughton, W. A. Sledge, 161; Trientalis at Cookridge, near Leeds, H. Foster, 161; Circular Notes (Appendix), Drop Clough (W. E. L. Wattam and Rev. T. A. Jeffries), Hawes (W. A. Sledge), Aberford (C. A. Cheetham), Hackness (H. E. Bentham), Pocklington (T. Stainforth); Species noted at Drop Clough, W. E. L. Wattam, 162-163; at Hawes, W. A. Sledge, 182; at Aberford, W. A. Sledge, 189-190; at Hackness, W. A. Sledge, 211, 233; Juniper in Swaledale, A. M. Smith, 177-178; Natural Wounds in the Leaves of Araucaria imbricata Pavon, illustrated, R. Block, 193-199; Habitats of species of Juncus, W. H. Pearsall, 204; County Records of Crepis biennis Linn., R. J. Flintoff, 206; Aquatic Vegetation of Malham Tarn, W. A. Sledge, 217-219; County Records for Carex elongata L., W. A. Sledge, 231; Botanical Section, Y.N.U. Annual Meeting Report, C. A. Cheetham, 262-263; Seedling Sycamores in Goyden Pot, H. Barnes, 276

YORKSHIRE—*continued*

Fungi.—Foray at Helmsley, 1935, J. Grainger and W. G. Bramley, 8-11 ; Four County Species new to Science, and other rare County Records, T. Petch, 57-60 ; Y.N.U. Sectional Report, 1935, J. Grainger, 70-71 ; A Note on Gibberella Saubinetii, T. Petch, 130 ; Buckden Fungus Foray Circ. (Appendix), J. Grainger ; County Additions found in the Whitby District, H. Britten, 203 ; Isaria exoleta Fr. at Tadcaster and Hubberholme, T. Petch, 250-251 ; Morchella vulgaris Pers. at Sheffield, J. M. Brown, 231 ; Species noted at Drop Clough, W. G. Bramley, 163 ; at Hawes, W. G. Bramley and J. Grainger, 187-188, 213 ; at Aberford, W. G. Bramley, 190 ; at Pocklington, T. Petch, 234-237 ; W. G. Bramley, 276 ; Foray at Buckden, 1936, including new British species and County Records, J. Grainger, W. G. Bramley and G. Sheard, 270-275

Geology.—Elephant's Tusk at Brandesburton, illustration, T. Sheppard, 3 ; Geological Notes, T. Sheppard, 12-13 ; Y.N.U. Sectional Report, 1935, 71-72 ; Circular Notes (Appendix), Drop Clough (T. W. Woodhead), Hackness (D. W. Bevan), Pocklington (H. C. Versey) ; The Copper Deposits of Middleton Tyas, N. Yorks., Dr. A. Raistrick, 111-115

Hemiptera.—Y.N.U. Sectional Report, 1935, J. M. Brown, 40 ; Whitby Records, H. Britten, 141 ; Species noted at Pocklington, J. M. Brown, 238 ; at Kilnwick Percy, J. M. Brown, 238 ; at Allerthorpe Common, 238-239 ; Circular Notes (Appendix), Pocklington (W. J. Fordham)

Heteroptera.—Species noted at Pocklington, J. M. Brown, 238 ; at Kilnwick Percy, J. M. Brown, 238 ; at Allerthorpe Common, J. M. Brown, 238

Homoptera.—Whitby Records, H. Britten, 141 ; Species noted at Pocklington, J. M. Brown, 238 ; at Kilnwick Percy, J. M. Brown, 238 ; at Allerthorpe Common, 239 ; Elasmotethus interstinctus at Sheffield, J. M. Brown, 252

Hymenoptera.—Y.N.U. Sectional Report, 1935, R. Butterfield, 43 ; Entomological Jacobites, W. J. Fordham, 132 ; Species noted at Aberford, W. D. Hincks, 192 ; Bee Swarm in a Gooseberry Bush at Scarborough, illustration, D. W. Bevan, 200 ; Circular Notes (Appendix), Pocklington (W. J. Fordham)

Lepidoptera.—Notes on the Season, 1935, G. E. Hyde, 4-5 ; Y.N.U. Sectional Report, 1935, C. A. Cheetham, 43 ; Circular Notes (Appendix), Drop Clough (W. E. L. Wattam), Hawes (J. M. Brown), Hackness (W. Head) ; Butterflies of the Huddersfield District, W. E. L. Wattam, 131-132 ; Entomological Jacobites, W. J. Fordham, 132 ; Swarming of Plusia gamma at Filey, T. Hyde-Parker, 231 ; also at Scarborough, W. J. Clarke, 252 ; Species noted at Hackness, Ivy Thomas, 210 ; Strymon w-album at Sinnington, G. B. Walsh, 276

Lichens.—Circular Notes (Appendix), Drop Clough (W. E. L. Wattam) ; Hawes (W. E. L. Wattam) ; Species noted at Drop Clough, W. E. L. Wattam, 163 ; at Hawes, W. E. L. Wattam, 184-186

Mammalia.—Elephant's Tusk at Brandesburton, T. Sheppard, 3 ; Y.N.U. Sectional Report, 1935, W. G. Bramley, 36-37 ; Vertebrate Zoology Section Reports, E. W. Taylor, 68-69, 279-280 ; Circular Notes (Appendix), Drop Clough (W. E. L. Wattam and E. Gallwey), Aberford (R. Fortune), Hackness (W. J. Clarke) ; Stoat and Trout, J. P. Utley, 142 ; Badger at Aberford, J. P. Utley, 189

Microscopy.—Notes from a Microscopist's Note Book, W. L. Schroeder, 60-61, 228-229

YORKSHIRE—*continued*

Mollusca (Land and Freshwater).—Y.N.U. Sectional Report, 1935, Mrs. E. M. Morehouse, 38-40; Species noted at Drop Clough, F. B. Stubbs, 164; at Hawes, E. M. Morehouse, 186-187, 207; at Aberford, E. M. Morehouse, 190-191; Circular Notes (Appendix), Hackness (E. A. Wallis); Note on Prof. Boycott's Paper on 'Habitats of Freshwater Mollusca,' W. H. Pearsall, 208; A Note on the References by Mr. Hans Schlesch to J. W. Taylor's Monograph on British Mollusca, T. Sheppard, 259

Mosses and Hepatics.—The Ida M. Roper Herbarium at Leeds University, W. H. Burrell, 65; Y.N.U. Sectional Report, 1935, F. E. Milsom, 70; Circular Notes (Appendix), Drop Clough, W. E. L. Wattam; Hawes, C. A. Cheetham; County distribution of Swartzia inclinata Ehrh., C. A. Cheetham, 104; Hypnum hamulosum B. & S. in West Yorks., C. A. Cheetham, 152, 176; Frost Effect on Mosses, C. A. Cheetham, 156; Thuidium abietinum B. & S. and T. hystricosum Mitt. in Yorkshire, C. A. Cheetham, 208-209; Time-Table for the Life Cycles of some Liverworts in Yorkshire, P. M. Clapham and M. Oldroyd, 253-259; Species noted at Drop Clough, F. E. Milsom, 164; at Hawes, T. H. B. Bedford, 183-184; at Aberford, F. E. Milsom, 190

Neuroptera and Trichoptera—Y.N.U. Sectional Report, 1935. J. M. Brown, 40; Species noted at Pocklington, J. M. Brown, 239

Personal Notices.—In Memoriam, W. H. Crofts (T. Sheppard), 34; Miss E. M. Pilkington (J. M. Brown), 61; Albert H. Pawson, J.P., F.L.S., F.G.S. (T. Sheppard), 90-92; Samuel Clough, J.P. (H. B. Booth), 115; F. A. Mason, F.R.M.S. (W. H. Pearsall), 133-134; Percy Fry Kendall, D.Sc., F.R.S. (A. Gilligan), 157-160; Ernest Hallowell (W. H. Burrell), 207

Plant Associations and Ecology.—Y.N.U. Sectional Report, 1935, D. Hilary, 46-47; Ecology at Hawes, A. M. Smith, 173-176; Aquatic Vegetation of Malham Tarn, W. A. Sledge, 217-219; Botanical Section, Y.N.U. Annual Meeting Report, C. A. Cheetham, 262-263

Plant Galls.—Species noted at Pocklington, J. M. Brown, 239

Plecoptera.—Y.N.U. Sectional Report, 1935, J. M. Brown, 41

Psocoptera.—Y.N.U. Sectional Report, 1935, J. M. Brown, 40; County List of Species, J. M. Brown, 135-139; Species noted at Pocklington, J. M. Brown, 239

Reptilia.—Y.N.U. Sectional Report, 1935, W. G. Bramley, 37; Common Lizard at Leeds, J. A. Butterfield, 67; Circular Notes (Appendix), Aberford (R. Fortune)

Yorkshire Naturalists' Union.—Helmsley Fungus Foray, 1935, J. Grainger and W. G. Bramley, 8-11; Annual Meeting at Sheffield, 1935, C. A. Cheetham, 12; Annual Report, 1935, C. A. Cheetham and S. D. P. Fisher, 14-24, 36-48, 70-72; Vertebrate Zoology Section Reports, E. W. Taylor, 68-69, 279-280; Circulars I to VI (Appendix), C. A. Cheetham; Excursion Reports, Drop Clough, 162-164; Hawes, 180-188, 207, 213; Aberford, 189-192; Hackness, 210-211, 233; Pocklington, C. A. Cheetham, 234-240, 276; Botanical Section Report, C. A. Cheetham, 262-263; Buckden Fungus Foray, 1936, J. Grainger, W. G. Bramley, and G. Sheard, 270-275

MISCELLANEA

Algæ.—Uncommon Algæ in the Lake District, W. H. Pearsall, 205-206; Growth of Algæ in different depths in the River Cam, R. W. Butcher and R. H. Mobbs, diagrams, 241-249

MISCELLANEA—*continued*

Birds.—Effect of Bird Life on Pond Life, E. Hardy, 6-7 ; British Trust for Ornithology, 53-54 ; Glossy Ibis at Foxton, New Zealand, 66 ; The Eclipse Plumage of Drakes, R. Perry, 105-110 ; Nesting of Fulmar Petrels on the Farne Islands, H. B. Booth, 199 ; A Note on the Dipper, W. R. Grist, 233

Botany.—The Wild Plant Conservation Board, 2-3 ; Natural Wounds in the Leaves of Araucaria imbricata Pavon, illustrated, R. Bloch, 193-199 ; Branching in Acer pseudoplatanus (Sycamore), illustrated, H. Barnes and J. D. Davey, 201-203 ; Habitats of Species of Juncus, W. H. Pearsall, 204

Entomology.—Report of Meeting of British Entomologists at Cambridge, W. D. Hincks, 214

Fishes.—Common Herring (*Clupea harengus* Linn.), illustrated, E. B. Dewberry, 97-104, 121-129

Fungi.—A Note on Gibberella Saubinetii, T. Petch, 130

Geology.—Geological Notes, T. Sheppard, 12-13, 212-213, 259 ; A Cup of Uintacrinus from the English Chalk, illustrated, A. G. Brighton, 169-172

Hymenoptera.—Appeal for Records of British Odynerus, H. P. Jones, 139

Lepidoptera.—Entomological Jacobites, T. F. Marriner, 93-94 ; Additional Entomological Jacobites, W. J. Fordham, 132 ; Report of Meeting of British Entomologists at Cambridge, W. D. Hincks, 214

Magazine Notes.—7, 11, 33, 34, 35, 54, 72, 82, 88, 96, 110, 120, 144, 151, 160, 172, 211, 215-216, 240, 264, 269, 278, 280

Mammalia.—The Scoresbys and the Greenland Whale, R. W. Gray, 145-151

Mollusca (Land and Freshwater).—Note on Prof. Boycott's Paper on 'Habitats of Freshwater Mollusca,' W. H. Pearsall, 208

Mosses and Hepatics.—Note on the Secretariate of the British Bryological Society, 214 ; Brachyodus trichodes Fuernr. in North Staffordshire, T. H. B. Bedford, 229-230

Museums.—Museum Notes, T. Sheppard, 213

Northern News.—The Coat of Arms of the Borough of Scunthorpe—Reprints from Hans Schlesch, T. Sheppard, 259

Poetry.—On the Glen Maye Shore, W. L. Schroeder, 1

Societies.—British Association, Sectional Presidents, 1936, 84 ; Blackpool Meeting Notes, T. Sheppard, 260-262 ; British Speleological Association, L. S. Palmer, 89

CIRCULAR No. 395.

Yorkshire Naturalists' Union.

President:
E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:
CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:
S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:
JOHN GRAINGER, M.Sc., PH.D., Tolson Museum, Huddersfield.

The 395th Meeting

WILL BE HELD AT

DROP CLOUGH

Between SLAITHWAITE and MARSDEN

On Saturday, APRIL 25th, 1936

HEADQUARTERS (for tea and meeting).—The Rose and Crown Inn, Slaithwaite. Plain tea, 1/-, Meat tea, 1/6. It would be a convenience if members intending to be present for tea would communicate with the Divisional Secretary before the date of the excursion.

ROUTES.—Two excursions will be arranged. One will start from the Olive Branch Inn, which is on the main road between Slaithwaite and Marsden, at 10-30 a.m., and will proceed by way of a field path and bridges over the canal and river to the lower part of Drop Clough, which is north of the main road ; they will ascend the Clough and make their way *via* Wool Clough or if time allows by Cupwith to the Rose and Crown Inn for tea. The Rev. T. A. Jeffries, M.Sc., F.L.S., will lead this party and will demonstate his researches on *Molinia cærulea*, Mænch.

The other party will meet at 2-15 p.m., at the Olive Branch Inn, and will follow the same route to the Clough. They will be led by Mr. W. E. L. Wattam, who will demonstrate his studies on the lower part of the Clough. This party will have opportunity to meet Mr. Jeffries later in the afternoon,

and will reach the meeting place for tea by a lower path than that taken by the morning party.

Members travelling by car may go direct to the Rose and Crown Inn, turning off the Manchester Road at Slaithwaite, then to Longlands, Clough House, Upper Holme, O'Cole, and so to Cop Hill, where the Rose and Crown Inn is situated ; gradients are steep—maximum 1 in 3—but are used by local motor traffic. The Divisional Secretary will meet travellers by car at the Rose and Crown Inn, at 10-30 a.m., and arrangements for other motorists will be made at 2-15 p.m., at the Rose and Crown.

TRAINS.—Leeds	9-18 a.m.	Huddersfield	9-47 a.m.*
,,	12-20 p.m.	,,	1-14 p.m.
Bradford	8-53 a.m.	Huddersfield	9-21 a.m.
,,	12-40 p.m.	,,	1-23 p.m.
Halifax	8-28 a.m.	Huddersfield	8-52 a.m.
,,	9-45 a.m.	,,	10-9 a.m.*
,,	1-5 p.m.	,,	1-29 p.m.*
Wakefield	8-55 a.m.	Huddersfield	9-39 a.m.
,,	12-51 p.m.	,,	1-29 p.m.*

*Passengers by these trains should take the bus **not** the tram.

Members may travel from Huddersfield to the Olive Branch Inn on a Marsden tram or bus. The former takes 40 minutes, the latter half that time. Trams go every 15 minutes from near St. George's Square ; Buses are every ½ hour from Macaulay Street.

BOOKS AND MAPS.—*Transactions Huddersfield Naturalists' Society*, Drop Clough, Marsden, Illustrated, by A. Dean, C. Mosley, and W. E. L. Wattam ; *Naturalists' Journal*, 1890, pp. 83-93. Y.N.U. Circular, 152, June 1900. One-inch Ordnance Survey, Sheet 30 (Large Sheet Series), with a small portion on Sheet 36 on which the Olive Branch Inn and footpath to the foot of the Clough are to be found.

GEOLOGY.—Dr. T. W. Woodhead writes : Drop Clough is carved out of the Millstone Grits on the southern edge of Slaithwaite Moors, the northern edge forms the well-marked escarpment overlooking Deanhead Valley. Over this wide expanse of peat-covered moorland is the most constant member of the Middle Grits—the Peele Hill Grit—which takes its name from the prominent hill two miles to the south-east. The Drop Clough stream has cut through this grit and exposed a fine natural section in the floor of the clough. The stream rises near Cupwith Hill, about 1,300 ft. O.D., and comes tumbling down its rocky bed in a series of picturesque waterfalls and cascades. The grits are flaggy with much sandy shale, becoming thick bedded and massive at the foot of the clough. In the shale parting in the upper part of the Peele Hill Grit, at Slaithwaite, a marine fauna is found, but goniatites, usually abundant in marine bands, have not yet been recorded.

ECOLOGY.—Mr. T. A. Jeffries, M.Sc., F.L.S., writes : A descent of about 400 ft. takes place in little more than half a mile and this is through a narrow wooded gorge, the real Drop Clough, which is as beautiful as it is interesting scientifically.

The upper reaches of the stream are over a typical Cotton Grass Moor (*Eriophoretum*), which continues along the southern side, called Shaw Heys to the 1,100 ft. line. The stream itself, however, from the 1,250 contour runs through a wide stretch of Blue Moor Grass (*Molinietum*), which narrows to a broad flush and then spreads out again on the south side over Netherwood Heys, occupying most of the moor as it slopes southward towards the Colne Valley, and much degenerate farmland. The north side of the stream,

known as Wortley Knowl and Reaps Hill is mainly a heather moor (*Callusetum*). As we descend into the gorge the natural drainage due to the south-east dip of the rocks expresses itself in the appearance of Molinia on the north bank and Calluna on the south.

BOTANY.—Mr. W. E. L. Wattam writes: Flowering Plants.—It will be much too early to see the whole of the one hundred and twenty-five plants of which I have record as occurring in this clough in their pleasing perfection. The Oak (*Quercus sessiliflora* Sm.) is the dominant tree, the sub-dominants being Beech, Sycamore and Goat Willow, Birch, Broad-leaved Elm, Hazel, Mountain Ash, Elder and Scots Pine also occur. Attention is also called to the hybrid Willows. Of the denizen flora mention may be made of *Anemone nemorosa* L., *Ranunculus hederaceus* L., *R. Flammula* L., *Cardamine hirsuta* L., *C. amara* L., *Viola palustris* L., *Polygala vulgaris* L., *Stellaria uliginosa* L., *Montia fontana* L., *Hypericum humifusum* L., *Ulex Gallii* Planchon, *Lotus major* Scop., *Vicia sepium* L., *Rubus Idæus* L., *R. cæsius* L., *Poterium officinale* Hook., *Chrysosplenium oppositifolium* L., *Circæa lutetiana* L., *Pimpinella Saxifraga* L., *Œnanthe crocata* L., *Angelica sylvestris* L., *Valeriana dioica* L., *V. officinalis* L., *Scabiosa succisa* L., *Solidago Virga-aurea* L., *Senicio aquaticus* Huds., *Lactuca muralis* Fresen., *Crepis paludosa* L., *Hieracium Pilosella* L., *H. umbellatum* L., *Erica tetralix* L., *E. cinerea* L., *Calluna*, *Euphrasia officinalis* L., *Melampyrum sylvaticum* L., *Scutellaria minor* L. (last record 1899), *Pinguicula vulgaris* L., *Empetrum*, *Orchis maculata* L., *Juncus uliginosus* Sibth., *Luzula sylvatica* Bich., *L. pilosa* Willd., *Arum maculatrum* L., *Narthecium ossifragum* Huds., *Carex panicea* L., *C. flava* L., *C. binervis* Sm., *C. lævigata* Sm., *Eriophorum vaginatum* L., *E. angustifolium* Roth.

Grasses.—*Deschampsia flexuosa* L., *Aira caespitosa* L., *Agrostis vulgaris* With., *Holcus mollis* L., *Nardus stricta* L., *Molinia cærulea* Mœnch, and var. *breviramosa*.

Ferns.—*Athyrium filix-fœmina*, *Lastrea filix-mas*, *L. dilatata*, *L. oreopteris* *Blechnum spicant*, *Pteris aquilina* and *Polypodium phegopteris*.

MOSSES.—Mr. W. E. L. Wattam writes: The Clough has never been expertly worked. Twenty-four species have been noted, among which are *Webera albicans* Lindb., *Polytrichum formosum* Hedw., *Dicranella heteromalla* Schp., *Mnium punctatum* L., *Dicranum bonjeani* De. Not., *Barbula convoluta* Hedw., *Amblystegium fluitans* De. Not., and *Hypnum purum* L., also the following three Hepatics, *Scapania undulata*, *Pellia epiphylla* (L.) Corda, and *Nardia compressa* Grey.

LICHENS.—The species typical of our South-west Yorkshire grit-stone valleys and resistant to the smoky conditions so prevalent will be seen. These are *Parmelia saxatilis* Ach., *Lecanora muralis* Schaer., *L. varia* Ach., *L. symmictera* Nyl., *L. conizæa* Nyl., *L. parella* Ach., *Cladaria pyxidata* Hoffm., *C. fimbriata* Fy., *C. gracilis* Willd., *C. coccifera* Willd., *Lecidia coarctata* Nyl., *L. granulosa* Schaer., and *L. contigua* Fr.

ENTOMOLOGY.—Lepidoptera: Mr. Wattam writes: It will be much too early for any considerable success. Pupa-digging and the gathering of fallen catkins from the male Willow trees will give the best results, especially as the latter will be sure to yield the larvæ of *Xanthia silago* and *X. cerago*. Records are known of six species of Butterflies, and thirty-two moths. The latter include *Saturnia carpini*, *Polia chi*, and its *V. olivacea*, *X. lithoxylea*, *F. atomaria* (with black form), *L. caesiata*, *H. elutata* (forms from a rich red to almost black have been taken), *M. montanata*, *C. bilineata*, and *C. fulvata*.

Records are desired for all other classes of insects.

VERTEBRATE ZOOLOGY.—Birds :—Mr. Wattam writes : Twenty species are known to regularly breed in the Clough. These include the Missel Thrush, Greenfinch, Willow Warbler, Blue Tit, Meadow Pipit, Ring Ouzel, Magpie, Pied Wagtail, and Red Grouse. Other occasional breeding species are Great Tit, Wood Wren, Wheatear, Common Snipe, Twite, and Whinchat. Visiting species noted include Bullfinch, Redstart, Blackcap, Dipper, Pied Flycatcher, Lesser Redpoll, Fieldfare, and Redwing.

Mr. Alfred Kaye, speaking of the district surrounding the place of the excursion, mentions the following species :—Golden Plover, Dunlin, Lapwing, Common Sandpiper, Short Eared Owl, Merlin, Twite, Ring Ouzel, Common Snipe, Jack Snipe, Grey Wagtail, Dipper, and Wheatear. Many intesesting species are seen on the reservoirs during the autumn migration, viz. : Scoter Duck, Wigeon, Mallard, Teal, Cormorant, Scaup, Great Crested Grebe, and Little Grebe. On Haigh Reservoir a Little Auk was seen on December 4th.

Birds that are supposed never to come very far inland, like the Little Auk, have been noticed in the district.

MAMMALS.—The following occur : Hare, Rabbit, Hedgehog, Field Vole, Long-tailed Fieldmouse, Weasel, Stoat, and Mole.

Miss E. Gallwey adds that the Common Shrew, Water Shrew and Bank Vole have also been seen.

MEETING.—Tea will be served at the Rose and Crown, Slaithwaite, at 5-30 p.m.

A general meeting will follow to receive reports from the various sections.

At this meeting we are anxious to have proposals for new members.

The next meeting of the Union will be the Whitsuntide Excursion, May 30th—June 1st ; this will be held at Hawes for the investigation of Sleddale, Dod Fell, and Weather Fell.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

.....19.....

.....[*Signature and Titles.*]

.....

.....[*Address.*]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written resignation is given.

Members are entitled to receive 'The Naturalist' and all other current publications of the Union, free.

.....
.....
[*Signature of Proposer and Seconder.*]

CIRCULAR No. 396.

Yorkshire Naturalists' Union.

President:
E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:
CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:
S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:
JOHN HARTSHORN, Bellerby Road, Leyburn.

The 396th Meeting

WILL BE HELD AT

HAWES

for the investigation of

SLEDDALE, DODD FELL AND WETHERFELL

On Saturday, MAY 30th, and Monday, JUNE 1st, 1936

HEADQUARTERS.—The White Hart Hotel, Hawes. Proprietress: Mrs. E. A. F. Beaumont. Terms, 10/- a day each person. It will be a great help if members will give early notice of the date of their arrival, and also if they will share a room. Whitsuntide is a busy time and it may be difficult to find rooms for those who delay writing for same.

ROUTES.—On Saturday the stream will be followed from Gayle to Duerley Bottom, then Little Ing Gill on to Dodd Fell, returning by the path on the Snaizholme side of the hill. On Monday by the road through Gayle to the top of the pass then the green trackway to Wether Fell, returning by Burtersett High pasture.

RAILWAY FACILITIES.—Hawes is served by the L.M.S. *via* Garsdale (Hawes Junction), or the L.N.E. *via* Northallerton ; there is also a good service of buses from Northallerton and Ripon.

Leeds	6-10 a.m.	Garsdale	9-7 a.m.	Hawes	10-30 a.m.
	10-20 a.m.		12-36 p.m.		1-16 p.m.
	1-51 p.m.		3-49 p.m.		4-12 p.m.
	3-35 p.m.		6-10 p.m.		6-41 p.m.
Leeds	7-55 a.m.	Northallerton	10-48 a.m.	Hawes	12-7 p.m.
	11-2 a.m.		1-40 p.m.		3-5 p.m.
	1-48 p.m.		4-9 p.m.		5-45 p.m.
	4-0 p.m.		7-10 p.m.		8-52 p.m.

Will members please check these times.

BOOKS AND MAPS.—Sheet 20, Large Sheet Series of the 1 in. Ordnance Survey covers the area. Baker's *North Yorkshire* deals with the botanical features of the district ; the Y.N.U. Circulars for 1884 and 1919 and the reports of these meetings in *The Naturalist* should be consulted ; ' The Geology of the Yorkshire Dales,' *Proc. Geol. Assoc.*, XLIV, Pt. 3, 1933, pp. 227-269, is very useful to geologists.

The general features of the area may be realised by saying that Sleddale is a valley which cuts through the whole of the Yoredale series of rocks from the highest limestones, called the Main limestone, through some of the other limestone beds, each with its series of limestone, shale, sandstone, down to the Great Scar limestone which is seen in the main river bed at Hawes. Evidence of former working of coal and ironstone may be seen in the spoil heaps on the sides of the valley. On the fell summits we get the lower beds of the Millstone grits with a heavy capping of peat in places, and consequently the flora is very varied. I am told by the Gearstones gamekeeper, Mr. Carrick, that he saw the Bearberry, *Arctostaphylos uva-ursi*, on Dodd Fell some eight years ago, but thought it had been rooted up. This should be borne in mind. The Main limestone is at an altitude of about 1,800 ft. O.D. and is exposed in cliffs, pavement, and pot-holes, giving varied habitats for plants, etc. At the north-east end of Dodd Fell there is a marshy area with small tarns, where the Black-headed Gulls have a nesting site, together with Redshank, Teal, Mallard, and Snipe. On the summits Black game are fairly plentiful, and the Dunlin may possibly be seen, together with the Golden Plover, Redshanks, and Curlew.

BOTANY.—Dr. W. A. Sledge writes : Dr. F. A. Lees, writing in *The Naturalist* for January, 1885, claims that ' Of the six great western river-valleys of Yorkshire, Higher Yoredale (or Wensleydale as it is styled upwards from Leyburn) ranks second only to Teesdale in the richness and variety of its plant life. This is so less from its wild mountainous character—for it is a broad, open dale—than by reason of the successive alternations of shales, flagrock, limestones, and grits which its slopes present, from the Yore bed at 500 feet altitude, to the Fell ridges at over 2,000 feet, affording suitable lithologic and climatic conditions for the occurrence in a most characteristic manner of both the two chief types of plants (dry and wet-loving) into which the Yorkshire flora can be divided. *Trollius europæus, Draba incana, Viola lutea, Geranium lucidum, G. sylvaticum, Geum rivale, Prunus Padus, Rubus saxatilis, Saxifraga hypnoides, Myrrhis odorata, Asperula odorata, Crepis paludosa, Carduus heterophyllus, Primula farinosa, Myosotis sylvatica, Salix phylicifolia, Rumex aquaticus, Cystopteris fragilis,* and *Asplenium viride* will be found generally distributed, and often in profusion, in all appropriate places.'

Baker (*North Yorkshire*, p. 166-167) gives the following as the more interesting plants of Sleddale from Dodd Fell summit to Gayle Force :—*Stellaria nemorum, Rubus saxatilis, R. chamæmorus, Ribes alpinum, Saxifraga granulata, S. hypnoides, Sedum villosum, Hieracium crocatum, H. amplexicaule*

(walls at Gayle), *Salix phylicifolia*, *S. nigricans*, *Habenaria albida*, and *Polypodium calcareum*.

In a later article contributed by Dr. Lees to Mr. Bogg's book on Wensleydale some additional species and localities are given. *Trientalis europæa* is said to grow ' in vast profusion ' in Widdale Car pine plantation and *Ribes petræum* and *R. alpinum* in the scree wood above Aisgill Force. *Peucedanum Ostruthium* grows about Rookhurst, Gayle, but of outstanding interest are the records given for Dodd Fell, which include *Thalictrum alpinum*, *Salix herbacea*, *Juncus triglumis*, and ' *Lastræa alpina* ' (? *L. Oreopteris*). From Mossdale, *Meconopsis cambrica*, *Meum Athamanticum*, *Vaccinium uliginosum*, and *Habenaria albida* are recorded.

Miss Rob writes : The alien *Erinus alpinus* grows in Sleddale quarry on the Hawes-Oughtershaw road.

LICHENS.—Mr. W. E. L. Wattam writes : Considering the varying geological strata within the area of investigation, the lichen flora should prove interesting. Special attention should be given to Widdale Fell ridge and search made on the south end thereof for confirmation of our only known County Station for *Cladonia rangiferina*. Dodd Fell (2189 ft.) and Weather Fell, as well as the whole of Sleddale, should yield numerous species, among them being *Collema pulposum* Ach., *Cetraria glauca* Ach., *C. islandica* Ach., *C. aculeata* Ach., *Usnea hirta* Hoffm., *Evernia furfuracea* Fr., *E. prunastri* Ach., *Ramalina farinacea* Ach., *R. fraxinea* Ach., *Peltigera rufescens* Hoffm., *P. polydactyla* Hoffm., *Candelaria concolor* Wain., *Parmelia perlata* Ach., *P. sulcata* Tayl., *P. fuliginosa* Nyl., *Xanthoria parietina* Th. Fr., species of *Placodium*, *Lecanora atra* Ach., *L. badia* Ach., *L. campestris* B. de L., *L. calcarea* Sommerf., *Pertusaria faginea* Leight., *P. pertusa* Dalla., and characteristic species of *Cladoniaceæ*, *Lecidias*, and *Verrucarias*.

MYCOLOGY.—On p. 307, *The Naturalist* 1919, Mr. F. A. Mason gave a list of fungi noted on the excursion, and Mr. Cheesman records 14 species of Mycetoza which he had found, the date of the meeting was June 7th to 9th, 1919.

MOSSES.—In the 1884 circular *Polytrichum gracile* Dicks, *Blindia acuta* B. and S., *Swartzia montana* Lindb. and *Encalypta ciliata* Hoffm. were given for the district. The high limestone area will be found interesting, and here are *Orthothecium intricatum* B. and S. var. *abbreviatum* Dixon, *Mnium orthorrhynchum* B. and S., *Fissidens decipiens* De Not, *Encalypta rhabdocarpa* Schwaeg, *Thuidium Philiberti* Limpr. and a type of *Tortula subulata* Hedw. with pointed leaves which may represent the sub-species *T. angustata* Wils. On the high grass-covered road *Swartzia inclinata* Ehrh. grows nearer Gearstones in West Yorkshire, but it should be found in North Yorkshire also where we are working.

ENTOMOLOGY.—Mr. J. Meikle Brown writes : The district should give the entomologists plenty of opportunity for good work, as comparatively little has been done already. In the reports of the two previous meetings of the Union to Hawes (*Naturalist*, 1884, pp. 17-18, and 1919, pp. 303-308), short lists of Diptera, Coleoptera and Lepidoptera (including the following butterflies : Orange Tip, Red Admiral, Peacock, Painted Lady, and Brown Argus), were given, but much remains to be done in these orders. On the other hand, I have few or no local records of such orders as Hemiptera, Plecoptera, Ephemeroptera, Trichoptera and Hymenoptera, and the almost complete absence of references to V.C. 65 in the articles on ' The Aculeate Hymenoptera of Yorkshire,' by R. Butterfield and W. J. Fordham, in the *Naturalist*, 1930-1932, points to a fruitful field for possible investigation.

Dr. W. J. Fordham writes : Coleoptera of Hawes District (Rarer). *Chlaenius nigricornis*, *Pterostichus adstrictus*, *Patrobus assimilis*, *Hydroporus*

septentrionalis, H. morio, Ocyusa incrassata, Quedius auricomus, Q. umbrinus, Dianous coerulescens, Stenus guynemeri, S. foveicollis, Lathrobium punctatum, Arpedium brachypterum, Choleva morio, Aphodius borealis, Aphodius lapponum Cantharis paludosa, Malthodes dispar, Chrysomela varians, Apion punctigerum, Coeliodes geranii.

ARACHNIDA.—Mr. Falconer gave a list of 61 species of spiders that he took in the district, on p. 305 of the 1919 *Naturalist*, he also cites some mites and harvestmen.

FRESH-WATER BIOLOGY.—Mr. J. Meikle Brown writes: The district will prove of great interest to the fresh-water biologists, there being an abundance of upland streams, in addition to the upper reaches of the River Ure itself. Duerley Beck, flowing through Sleddale, should be of especial interest. Rising at a height of about 2,000 feet on Dodd Fell, the upper course falls steeply and rapidly, descending in about a mile and a half to 1,000 feet. Here the stream flows with rapid current over a bed consisting largely of native rock. In contrast to this, the lower course to Gayle is of much gentler gradient, with slower current, and with more loose material in the bed. This should give opportunity for observations on the effect of these differences on the fauna. In addition, the streams hereabout have so far not received attention, and again comparisons may be made with those on the other side of Wether Fell, in Raydale and Semerdale, which were worked two years ago. Some interesting upland types might be found.

MEETING.—**A Tea and General Meeting** will be held at the White Hart, on Monday, at 5-30 p.m. and 6 p.m. The last train to Northallerton leaves at 6-41 p.m. and to Garsdale at 8-52 p.m. We hope to have proposal forms from prospective members to submit at this meeting. Forms may be had from the Secretary, Austwick. The next meeting is in V.C. 64 at Aberford, on June 20th.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

.....19.....

.....[*Signature and Titles.*]

.....

.....[*Address.*]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) *per annum until the end of the year in which written resignation is given.*

Members are entitled to receive 'The Naturalist' and all other current publications of the Union, free.

..... } [*Signature of Proposer and Seconder.*]

..... }

CIRCULAR No. 397.

Yorkshire Naturalists' Union.

President:
E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:
CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:
S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:
RILEY FORTUNE, F.Z.S., 8 West Cliff Terrace, Harrogate.

The 397th Meeting

WILL BE HELD AT

ABERFORD

On Saturday, JUNE 20th, 1936

HEADQUARTERS.—The Swan Hotel, Aberford.

ROUTE.—The course of the Cock Beck will be followed by Barwick Banks to where the beck crosses the Barwick-Aberford road, then forward to Parlington Park and Hook Moor, returning thence to Aberford.

Permission to visit his estate has been granted by Col. Gascoigne.

Mr. W. E. Bramley will act as guide and the party will leave headquarters at 10 a.m. Afternoon comers should join on Hook Moor.

TRAVEL FACILITIES.—Aberford is now easy of access by direct bus from Leeds, leaving New York Road at a quarter past the hour and taking 35 minutes for the journey. The returning buses leave at 25 past and 55 past the hour.

Aberford lies 2 miles south of Bramham cross-roads and is 3 miles from Garforth Station; it is to be found on Sheet 31 of the large size series of the 1-inch Ordnance Survey.

GEOLOGY.—Aberford is a somewhat straggling village which lies where the Great North Road crosses the Cock Beck; here it is on the escarpment of the Magnesian limestone which is very fossiliferous in many of the neighbouring quarries; in these good casts of *Schizodus obscurus* are abundant and in Kendall and Wroot's book *Bakevellia antiqua* and a small *Nautilus* perhaps *N. freieslebeni* are also mentioned. At the base of the limestone are the Yellow Sands which show the Permian characteristic of rounded grains, and near Micklefield there is a buff-coloured band of sandstone, an unusual feature in the Magnesian Limestone of Yorkshire.

BOTANY.—The characteristic plants of the Magnesian Limestone are well seen in the area to be covered. In the hedgerows *Cornus sanguinea* L. and *Bryonia dioica* L. with *Ballota nigra* L. and *Brachypodium pinnatum* Beauv. may be taken to show quite clearly that we are on the Magnesian Limestone and in a less distinct way we might put *Scabiosa columbaria* L., *Campanula glomerata* L., *Plantago media* L., *Orchis pyramidalis* L., *Galium Mollugo* L. and *Bromus erectus* Huds. Among other plants mentioned in old lists which it would be well to confirm are *Clematis vitalba* L., *Helleborus viridis* L., *Aquilegia vulgaris* L., *Actaea spicata* L., *Hypericum montanum* L., *Astragalus hypoglottis* L., *Asperula cynanchica* L., *Carduus tenuiflorus* Curt., *Atropa belladonna* L., *Orobanche major* L., *Lithospermum officinale* L., *Hottonia palustris* L., *Plantago coronopus* L., *Ophrys apifera* Huds., *Spiranthes autumnalis* Rich. and *Convallaria majalis* L.

Among the mosses the chief plants to be seen are *Thuidium hystricosum* Mitt. on Hook Moor and *Tortula cernua* Lindb. with *Leptobryum pyriforme* Wils. near to Garforth Colliery. The small *Tortulas T. ambigua* Aongstr., *T. rigida* Schrad., etc., should be examined and other *Thuidia* like *T. recognitum* Lindb. may be found.

ZOOLOGY.—Mr. Riley Fortune, F.Z.S., writes :—Birds.—The district is rich in bird life, most of the smaller species may be seen, Warblers being abundant. Game is preserved, consequently birds of prey are not common, but both Sparrow Hawk and Kestrel breed. The Tawny Owl is fairly common, the Barn Owl much less so, and the Little Owl has found a home in the district. In the Park both the Green and Greater Spotted Woodpecker may be found.

Mammals.—The commoner species are plentiful and the Badger is found in the district, but the district does not appear to have been much worked, and there are not many records of Zoological interest published. I have seen the Noctule and Pipistrelle Bats and no doubt other species occur.

Fishes.—The only ones I have seen are Trout, Minnow, Bullhead and Stickleback.

Reptiles, Etc.—Common Lizard, Adder, Frog and Toad are the only records I have.

MEETING.—A tea will be provided at the Swan Hotel at 5 p.m., prices 1/3, 1/6 and 2/6. A meeting to receive reports and if possible to elect new members will be held at 6 p.m.

The next meeting will be at Hackness on July 11th.

Circular No. 398.

Yorkshire Naturalists' Union.

President:
E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:
CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:
S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:
G. B. WALSH, B.Sc., Linthorpe, Stepney Drive, Scarborough.

The 398th Meeting

WILL BE HELD AT

HACKNESS

On Saturday, JULY 11th, 1936

HEADQUARTERS.—The Everley Hotel (Mr. W. H. King), Everley, Hackness, near Scarborough. There is accommodation for a limited number of members. Terms: 10/6 per day each for double rooms; 12/6 per day each single rooms.

TRAVEL FACILITIES.—Members will travel to Scarborough by train; a Blue Bus for Hackness leaves the County Garage, St. Thomas Street, Scarborough, at 9-45 a.m., and stops at Alma Parade, Londesborough Road and White Horse Inn. The next bus leaves at 12-10 p.m. Return buses leave Hackness at 3-30 p.m. and 6-45 p.m., and take 40 minutes for the journey. Single fare, 1/-. Return, 1/10.

PERMISSION.—Permission to visit the estate has been kindly granted by the Rt. Hon. Lord Derwent. Members are requested to be very careful not to cause any risk of fire to the woods and moors.

ROUTE.—The party will meet at the bridge over the stream at Hackness at 10-30 a.m., they will walk up Lowdale, Highdale to Whisperdale, where tea and refreshments may be obtained at the farm and if necessary lunch can be bought there. They will then go to the top of Silpho Moor and bear left till Broxa is reached. They will then follow the sunken road on the left to the road in Lowdale and so back to Hackness.

MAPS AND BOOKS.—The Pickering Sheet xxii of the large series 1-in. Ordnance Survey Map covers the area, and members may consult Baker's North Yorkshire for botanical matters, and Kendall and Wroot's Geology of Yorkshire.

GEOLOGY.—Mr. D. W. Bevan writes:—Hackness stands in a romantic spot, at the junction of a series of dales which spread out finger-like to the north of the village, cut out of an outlier-plateau—Silpho Moor—of the Middle Oolites (see Geol. Survey Map ' New Series, No. 44 '). The sides of these dales, and indeed every hillside for miles around, show beautifully

in their contours characteristic scenery due to the succession of Kellaways Rock, Oxford Clay, Calcareous Grit and Coralline Limestone. The upper precipitous slopes (C.G.) are tree-clad, the concaves below (O.C.) are tilled, as is the convex K.R. at the foot. Where the plateau is capped by Coralline Oolite, good farm land results. Where that has been denuded off, moorland covers the C.G.

West of this little plateau, and separated from it by the Derwent—an outlier of an outlier—is Langdale Rigg, two miles long and capped by C.G. except where the capping has gone at the south end, so producing the striking ' Sugarloaf.' The Rigg is cut off from the main mass by Langdale, the valley of the Derwent, which comes down from the moors of the Lower Oolites away to the north.

Geologists should certainly follow one of the ' fingers ' just mentioned, say Whisperdale. To traverse the very heads of the dales involves some scrambling. These gills are well called by Fox Strangways ' miniature canyons.' The springs issuing from under the C.G. make of them veritable ferneries, with ferns as green in winter as in summer.

Out on the moor above, the escarpment of the Middle Oolites is soon reached, 550 ft. above O.D., and dropping steeply to 350 ft., giving a fine panorama of the Lower Oolites (Upper Estuarine) rising gradually to the north—the dip being in this district south—and drained by the Derwent and its tributaries.

The western corner of this scarp, Barnes Cliff, is a point of vantage for the appreciation of Professor Kendall's description of the severing of Langdale Rigg from the main mass. He visualises a beck *rising on the plateau* in pre-glacial times and flowing down Langdale. The pre-glacial Derwent flowing south from its source reached the escarpment and *turned east* for the sea. The ice-cap blocked that route, the impounded waters formed a lake, which happened to overflow its lip opposite the Langdale Beck, cut out a connecting gorge, and so changed the course of the Derwent. (For Professor Kendall's paper see *Quart. Journ. Geol. Soc.*, Vol. LVIII, p. 550.)

A still more striking result of similar causes is the carving out of Forge Valley (*Quart. Journ. Geol. Soc.*, LVIII, p. 553) ; the facts are best observed from the bank above Wrench Green, a hamlet half-a-mile south of Hackness. There the Derwent Valley is almost a mile across at the top. The ever-widening valley is seen to turn sharply to the east 1½ miles away. That valley was blocked, and is now deserted except for an artificial cutting. A lake was formed, and the narrow entry into the charming gorge, Forge Valley, carved out by the overflowing waters, is strikingly evident from the point referred to.

While this beautiful district is so satisfying to geologists from the scenic point of view, the same cannot be said of its fossils. Quarries exceedingly rich in fossil remains—notably those in the Coral Rag—are no longer needed for road metal, and are abandoned. There is a derelict quarry in the Kellaways in Hackness, which furnished the stone for Christ Church and the Museum at Scarborough—unfortunately, as the condition of those ' sacred edifices ' testifies.

A good Limestone Quarry still worked at Suffield Ings, on the plateau, has *Gervillia aviculoides*.

A Coral Rag quarry at Suffield, which once furnished numbers of *Spongia floriceps*, *Waldheimia*, *Cidaris*, etc., is out of action.

A quarry in the Calc Grit, not far away, is full of irregular branching masses which have been identified as ' sponges? ' These are worth examining by experts. Lest this site should be off the official routes, specimens shall be on view at Headquarters. The Calc Grit of this district also furnishes numbers of distorted *Modiola bipartita*.

VERTEBRATE ZOOLOGY.—Mr. W. J. Clarke, F.Z.S. writes :—
The following is a list of the Mammals and Reptiles found in the district :

Hedgehog
Mole
Common Shrew } Common.

Lesser Shrew, Water Shrew, Whiskered Bat } Rare.
Pipistrelle Bat. Common.
Noctule. Now rare, formerly more abundant.
Long-Eared Bat, Fox } Common.
Badger, Otter } Scarce, much persecuted, but not to point of extermination.
Pine Marten. One seen at Everley by H. Knight Horsfreed in 1925—no later record.
Stoat, Weasel } Common.
Red Squirrel } Now very rare, formerly abundant. It had disappeared *before* the Grey Squirrel came.
Grey Squirrel. Common.
Dormouse. Very Rare.
Wood Mouse, House Mouse, Brown Rat, Water Vole, Field Vole } Common.
Bank Vole } The numbers of Voles of all species vary very much from year to year.
Rabbit. Common.
Hare. Scarce.
Common Lizard, Slow Worm } Neither very common.
Viper. Common on the moors, less so than formerly.

BIRDS OF THE DISTRICT.—Mr. T. N. Roberts writes :—A more interesting district for the study of bird-life than the countryside of which Hackness is the centre could not easily have been chosen for a Y.N.U. Excursion.

On the lowlands bordering the Derwent, the most conspicuous bird observed will be the Lapwing, while Skylark and Meadow Pipit abound here as elsewhere.

On the hedgerows and waste lands, Brown Linnets will be found in abundance, but Greenfinch, and Bullfinch, Goldfinch, Chaffinch, Yellow Hammer and Tree Sparrow may be met with.

The Kingfisher and Dipper are resident on the river and larger streams, and Common Sandpiper, Grey Wagtail, Common Snipe, and possibly the Heron will be seen.

The woods in the neighbourhood—including the beautiful Raincliffe Woods—are veritable paradises for many species of Warblers, and in them Willow Warbler, Chiffchaff, Wood Warbler, Redstart, Pied and Spotted Flycatchers with Tree Pipit and Golden-crested Wren will be found.

The Tits—of course—are everywhere ; five species will probably be observed, Blue, Great, Cole, and Marsh Tits will be seen, and the lovely Long-tailed Tit is an increasing species.

Of the larger species, Kestrel, Sparrow Hawk, Carrion Crow, Magpie, Jay, Stock Dove, Ring Dove, and two or three species of Owl are all in residence.

On the high moors Curlew, Golden Plover, and Merlin may be seen, with Stone Chat, Ring Ouzel and Nightjar near the edges, while a large and increasing colony of Black-headed Gulls, along with a few pairs of Teal exist not many miles distant and rear their young.

On the lake at Hackness many Mallards may be seen and possibly a Little Grebe or two.

BOTANICAL.—Mr. H. E. Bentham writes :—Hackness and the immediate district is an admirable centre for botanical work, comprising as it does a considerable variety in soils and elevation. The broad glacial

river valley where the Derwent is met by one of its principal tributaries, forms a sheltered area with a fairly rich soil where are to be found many of the choicer plants.

The elevated portions of the district consist mainly of unique ' tabular formations, harder rock upon shaley beds, which provide miniature dales and dried water-courses penetrating to the vale below. Many of the slopes are richly covered with trees in great variety, though conifers are not abundant in the locality. It is about these wooded slopes that some rarities may be looked for. There is a considerable outcrop of Oolitic Limestone as well as heavy Boulder Clay overlaying much of the higher ground.

It will therefore be manifest that the locality offers good scope for a variety of plants.

Taking an area of from three to four miles in radius the district may be roughly divided into four fairly distinct botanical areas. (*a*) The main river valley from Everley through Forge Valley as far as Ayton Castle banks. (*b*) The wooded slopes of this and other smaller valleys. (*c*) Moorland (Silpho and parts of Seamer Moor). (*d*) The dales and meadow land (Lowdales, Whisperdale and Highdale).

In the first area (*a*) the following plants may be looked for :—*Ranunculus auricomus, Caltha palustris, Helleborus viridis* (below the banks at Ayton Castle), *Eranthis hyemalis* (naturalised in Hackness Churchyard), *Cardamine amara* and *hirsuta, Malva moschata, Geranium pratense, Geum rivale, Saxifraga granulata* (dry banks, near Ayton Castle), *Callitriche stagnalis, Lactuca muralis, Gentiana amarella, Linaria cymbalaria, Scrophularia aquatica, Chenopodium bonus-Henricus, Polygonum bistorta, Iris pseudacorus, Potamogeton densus, Eleocharis palustris, Asplenium Ruta-muraria* (on walls in Hackness village), *Equisetum sylvaticum, palustre* and *limosum, Petasites ovatus.*

In the second area :—*Euonymus Europaeus, Acer Campestre, Vicia sylvatica, Prunus insititia, Angelica sylvestris, Campanula glomerata* and *latifolia, Melampyrum pratense, Lathraea squamaria, Neottia nidus-avis, Cephalanthera longifolia, Paris quadrifolia* (lower slopes near the river), *Maianthemum bifolium, Gagea lutea* (a few colonies in Upper Yedmandale), *Luzula pilosa, sylvatica* and *multiflora, Convallaria majalis* (scarce), *Polystichum aculeatum, Lastrea aristata, Polypodium vulgare, Phegopteris dryopteris, Actaea spicata* (lower slopes).

In the third area :—*Rosa mollis, Pyrola minor* (found on Seamer Moor), *Trientalis Europaea* (occurs occasionally at edges of moors and woods), *Listera cordata* and *ovata* (along roadsides, Silpho Moor), *Carex caryophyllea, pendula* and *binervis, Sieglingia decumbens, Empetrum nigrum.*

In the fourth area and generally about more open country :—*Arenaria trinervia, Sagina procumbens, Hypericum pulchrum* and *montanum, Prunus padus, Chrysosplenium alternifolium, Myrrhis odorata, Achillea ptarmica, Lactuca muralis, Orchis ustulata, maculata, apifera, morio* (found sparsely about Highdale), *Habenaria bifolia, Catabrosa aquatica, Melica nutans, Bromus erectus, Ophioglossum vulgatum, Botrychium lunaria* (meadows near Wrench Green).

LAND AND FRESH-WATER MOLLUSCA.—Mr. E. A. Wallis writes :—The Hackness area, including Forge Valley and the flat valley between Raincliffe Woods and Suffield, is remarkably rich in land and fresh-water mollusca. The geological formation is entirely Oolitic ; and there is a deposit of peat and lacustrine material in the area drained by the new cut. A very complete list of the mollusca of the whole Scarborough District, in which the area under review is included, was published by the late J. A. Hargreaves, in 1909, in the *Journal of Conchology*, Vol. XII, p. 299, *et seq.*

The vegetation of the district is remarkably diversified ; there is an unusually large number of different kinds of trees, and the smaller forms of vegetable life are equally prolific in variety.

Among the most interesting shells to be looked for in Forge Valley are *Vitrea pura, V. radiatula, Zonitoides excavatus* and *Euconulus fulvus. Z. excavatus* occurs along the top of the ridge on the west of the Hackness

Valley ; and *Balea perversa* is to be found on the dry stone walls in that area. *Punctum pygmæum* occurs sparingly under stones throughout the district ; and *Phyradium edentula* can be found in fair numbers on the stems of Lastræa and Iris in the marshy places. *Hygromia fusca, H. granulata,* and *H. hispida* are all abundant, and *H. rufescens,* though very local, is recorded from Suffield and Hackness. *Acanthinula aculeata* and *A. lamellata,* though neither of them is abundant, occur throughout the district ; the latter especially affecting dead holly and beech leaves. *Azcca tridens* and *Acicula lineata* occur in Forge Valley, and the latter species has also been taken in Raincliffe Woods and Hackness.

Very fine and dark specimens of *Succinea putris* occur in many suitable places, and a few specimens of *L. elegans* should be found along the Derwent. *Clausilia laminata* and *C. bidentata* are fairly common. *Jaminia anglica* occurs in wet moss in the woods below Spikers Hill Farm, and *J. muscorum* in Lowdale, near Hackness.

The fresh-water mollusca are not so well represented. *Ancylus fluviatilis* and *Acroloxus lacustris* both occur in the Derwent. The only locality in the district for *Planorbis glaber* is a shallow pond at Suffield. *Valvata cristata* occurs in the Derwent at Ayton, and probably further up the valley. *Anodonta cygnæa* var. *anatina* is common in the Scalby Cut, specimens generally being very tumid in form and eroded. It has not been recorded from the River Derwent. *Sphærium lacustre* should be found in the ponds at Suffield.

Taking it as a whole the area is remarkably rich in molluscan life, and conchologists should have an enjoyable time exploring it.

LEPIDOPTERA.—Mr. H. W. Head writes :—*Aglaia* and *Selene* also *Plantaginis* are common in the dales, especially near Broxa, and *Russula* occurs sparingly ; *Papilionaria* amongst the Birches.

Fasciaria, Liturata, Firmata, and *Firtiata* are sometimes plentiful in the Fir woods ; and *Populata* common where Bilberry grows. *Graminis, Agathina, Neglecta, Myrtilli* and *Interrogationis* are all more or less common on the moors, but only *Myrtilli* and *Interrogationis* fly by day. Ova and larvæ of *Dictaoides, Dromedarius,* and *Leporina* are to be found on Birch, and it would be worth while to look out for *Bicuspis* ova or very small larvæ on Birch and Alder. I took the larvæ some years ago on the moor just above Mount Misery, overlooking Troutsdale. *Furcula* and *Ziczac* are fairly common on Sallow.

On the heather, larvæ of *Carpini, Callunae, Menyanthidis, Rumicis,* and *Glauca* all occur but will mostly be very small and only to be got by sweeping. Larvæ of *Piniperda* can be beaten from the Pines, and *Elpenor* on Willow-herb, but it is rather early for most of the larvæ, they will be small and take some looking for.

COLEOPTERA.—Mr. G. B. Walsh writes :—The Hackness district is rich in beetle life, although the best of the collecting season will be over at the time of the excursion. Mountain Ash should yield *Anthonomus conspersus* and *Rhynchites cupreus,* and Hogweed flowers will probably have *Orsodacna cerasi,* and its black form *Glabrata.* Felled timber should be examined for subcortical species and for Longicorns ; *Saperda scalaris* and *Tetropium crawshayi* have both been taken recently, and *Acrulia inflata* is rare, but widely distributed in the district. The stream should be searched for beetles under stones, and a number of northern *Bembidion* species occur on the shingle beds.

Coleopterists who stay over the week-end will find that the west side of Forge Valley both above and below the cottages will well repay working.

MEETINGS.—A plain tea (1/3 each) or a meat tea (2/- or 2/6 each) can be had at the Everley Hotel, at 5 p.m.

A General Meeting will be held at 5-45 p.m. Return bus passes the hotel at 6-47 p.m.

The Next Meeting of the Union is at Pocklington for V.C. 61, on Saturday, August 1st to Monday, August 3rd, 1936.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to
The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster; or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership:—A Donation of 11 Guineas.

Yorkshire Naturalists' Union.

.....19.....

.....[*Signature and Titles.*]

.....

.....[*Address.*]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written resignation is given.

.....
.....
.....
[*Signature of Proposer and Seconder.*]

Elected.....19 *at*.....

.....*Chairman's Signature.*

CIRCULAR No. 399.

Yorkshire Naturalists' Union.

President:
E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:
CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:
S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:
C. W. MASON, 15 Park Avenue, Hull.

The 399th Meeting

WILL BE HELD AT

POCKLINGTON

On Saturday, AUGUST 1st, 1936 to Monday, AUGUST 3rd, 1936

for the investigation of the country on the edge of the Wolds between Warter and Millington.

HEADQUARTERS.—The Buck Hotel, Pocklington (Mr. G. B. Turnpenny). Terms: 10/- per day. Telephone: 38 Pocklington. Members should write and book rooms early. Good garage available.

TRAVEL FACILITIES.—There is a bus service from York every 20 minutes and some have a through connection to Leeds. There is also an hourly bus service from Hull. Bus from Pocklington to Warter Priory, 9-40 a.m., 11-40 a.m., 1-40 p.m.; returning 3-55 p.m. and 5-55 p.m.

PERMISSION.—Mr. H. P. Whitworth has kindly given permission to visit his estate and Allerthorpe Common.

GEOLOGY.—Dr. H. C. Versey writes :—The Pocklington area presents geological problems connected with three geological formations. The Jurassic rocks show the remarkable thinning attributable to the Market Weighton axis, but only the Lower and Middle Lias are seen near the town. At Givendale the Estuarine Series thin away to nothing. All these Jurassic rocks are covered unconformably by the Cretaceous rocks with the Red Chalk at their base. Attention should be directed to an examination of this rock with special reference to the pebbles of earlier rocks which it often contains. Search should also be made for exposures of sandy strata under the Red Chalk. Isolated occurrences of such sands, often ferruginous, are known in East Yorkshire, and the sands are the equivalent of the Carstone of Lincolnshire.

On the low ground fringing the Wolds there are exposures of glacial drift including sands and gravels. These occur at various levels, and information is required concerning the relation, if any, which exists between the composition of the gravels and the height at which they occur.

VERTEBRATE ZOOLOGY.—Mr. C. F. Procter writes :—Pocklington is situated on the western slope of the Wolds and the fauna is very typical of a highly-cultivated wold area. Whilst isolated patches of common exist here and there, they are never sufficiently large to attract a specialised fauna in a manner to affect the countryside. All the usual crops are grown, in addition to which there are large tracts of grassland, whilst the fact that the area is well wooded makes it a typical game country. This, in turn, involves a high standard of game protection with the common result that game is abundant. The raptores, except the kestrel and sparrow hawk, are rare, but the carrion crow and magpie are common. These and an occasional jay appear to be the only predatory species which persistently evade the efforts of man. Occasionally birds of considerable interest may be found, and the twite is by no means rare in some of the hilly situations. As for the rest, it will perhaps be invidious to distinguish the whole of the finches and song birds, as they are to be found everywhere. The lapwing nests persistently, the kingfisher and dipper may be encountered anywhere, whilst the sandpiper often lends charm and interest to the streams.

Among the reptiles the grass snake may turn up at any time and place, but I have no record of the viper immediately round Pocklington, although it occurs at Skipwith and places not far away.

FLOWERING PLANTS AND FERNS.—Mr. T. Stainforth writes :—Owing probably to the special attractions of the neighbouring common at Allerthorpe the botany of the wolds area and valleys near Pocklington has not received the attention it deserves. The richly-wooded valleys and the more barren uplands form a promising area. The following plants, some of which are aliens, have been noted in the Londesborough and Warter areas :—*Thlaspi arvense, Berberis vulgaris, Helianthemum Chamaecistus* (Millington), *Viola hirta, Geranium sanguineum* (Millington), *G. nodosum, G. phaeum, G. lucidum, G. pratense, Spiræa Filipendula* (Millington), *Geum intermedium, Poterium sanguisorba, Ribes alpinum, Lonicera caprifolium, L. Xylosteum, Doronicum Pardalianches, Cnicus eriophorus, Campanula glomerata* (Millington), *Specularia hybrida, Vinca major, V. minor, Cuscuta trifolii, Linaria Cymbalaria, Origanum vulgare, Lamium Galeobdolon, Polygonum Bistorta,*

Rumex sanguineus, Daphne Laureola, Festuca elatior, Carex hirta, Asplenium Trichomanes.

ENTOMOLOGY.—The area suggested for the excursion has been neglected by entomologists, to whom Allerthorpe Common appeals much more as a collecting ground. Dr. W. J. Fordham sends the following list of insects which have been collected on the Common :—

Coleoptera.—*Carabus nitens, C. arvensis, Miscodera arctica, Bembidion doris, Pterostichus lepidus, P. adstrictus, Agabus labiatus, Hydroporus melanarius, Aleochara spadicea, Phloeophora angustiformis, Atheta rigua, Quedius nigrocoeruleus, Hister marginatus, Diphyllus lunatus, Litargus connexus, Endomychus coccineus, Prosternon holosericeus, Thanasimus formicarius, Ernobius nigrinus, Saperda populnea, Zeugophora subspinosa, Sitones griseus, Trachyphloeus myrmcophilus, Dorytomus salicis, Orobites cyaneus, Sphaeriestes castaneus, Tetratoma fungorum.*

Aculeate Hymenoptera.—*Myrmosa melanocephala. Methoca ichneumonoides, Psammochares rufipes, P. nigerrimus, Hypsiceraeus maculatus, Psen dahlbomi, Mellinus sabulosus, Blepharipus pubescens, B. capitosus, Odynerus crassicornis, Colletes picistigma, Halictus rufitarsis, Andrena praecox, A. tarsata, A. fulvago, Epeolus notatus, Coelioxys rufescens, Notozus panzeri, Hedychridium ardens, Chrysis cyanea, C. viridula.*

Sawflies.—*Pamphilius pallipes, P. vafer, P. hortorum, Cephus pallipes, Arge enodis, Hemichroa alni, Pristiphora melanocarpa, Ardis sulcata, Entodecta pumilus, Phyllotoma ochropoda, Thrinax macula, Dolerus nitens, Allantus vespa.*

Hemiptera.—*Asopus punctatus, Zicrona coerulea, Acanthosoma interstinctum, Myrmus miriformis, Piezodorus lituratus, Tingis ampliata, Gastrodes ferrugineus, Coranus subapterus, Pantilius tunicatus, Calocoris roseomaculatus, Stenotus binotatus, Cyllocoris flavonotatus, Poeciloscytus unifasciatus, Psallus obscurellus, Corixa striata, C. praeusta, C. distincta, Ulopa reticulata, Tettigonia viridis, Macropsis impura, Idiocerus fulgidus, I. lituratus, I. confusus.*

Diptera.—*Nephrotoma crocata, N. scurra, Tipula vittata, T. pruinosa, Prionocera turcica, Chrysonotus bipunctatus, Nemotelus nigrinus, Therioplectes tropicus, Dioctria atricapilla, D. baumhaueri, Lasiopogon cinctus, Epitryptus cingulatus, Neoitamus cyanurus, Thereva annulata, Rhamphomyia filata, R. sulcatina, Hilara gallica, Neurigona suturalis, Pipunculus zonatus, P. terminalis, P. semifumosus, Chilosia honesta, C. vulpina, Ischyrosyrphus glaucius, Physocephala rufipes, Zodion cinereum, Zenillea pexops, Z. roseana, Hypochaeta inepta, Hammomyia grisea, Prosalpia alpestris, Helomyza ustulata, Scoliocentra villosa, Euaresta conjuncta.*

MEETINGS.—A plain tea (1/3 each) or a meat tea (2/- each) will be served at Headquarters at 5 p.m.

A General Meeting will be held at 6 p.m., at which we shall be glad to have proposals for new members.

The Next Meeting of the Union will be the Fungus Foray at Buckden on September 4th, 1936.

Yorkshire Naturalists' Union.

.....19.....

.....[*Signature and Titles.*]

.....

.....[*Address.*]

(xx) *wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS* (15/-) *per annum until the end of the year in which written resignation is given.*

.....
.....
} [*Signature of Proposer and Seconder.*]

Elected.....19 *at*.....

.....*Chairman's Signature.*

YORKSHIRE NATURALISTS' UNION.

For particulars apply to
The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster; or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership:—A Donation of 11 Guineas.

CIRCULAR No. 400.

Yorkshire Naturalists' Union.

President:
E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:
CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:
S. D. PERSY FISHER, Sackville Street, Leeds.

The 400th Meeting

WILL BE THE

ANNUAL FUNGUS FORAY

OF THE

MYCOLOGICAL COMMITTEE

AT

BUCKDEN

From Saturday, September 5th, to Wednesday, September 9th, 1936

Chairman of the Mycological Committee:
A. A. PEARSON, Esq., F.L.S., Tunbridge Wells.

Hon. Secretary and Convener:
Dr. JOHN GRAINGER, Tolson Museum, Huddersfield.

HEADQUARTERS.—The Buck Inn, Buckden, Skipton (Proprietor: Mr. F. H. Wade). Terms: 10/6 per day.

MAP.—Sheet 20 of the 1-in. Large Size Ordnance Survey covers the area.

MEETING.—The Annual Meeting of the Mycological Committee will be held at headquarters on Saturday, 5th September, at 8 p.m. At 7-50 p.m. the Hon. Secretary desires

to call attention to the distribution of Mycological Excursions in the County of York, and to place information before members prior to the discussion of future meeting-places.

LECTURES.—An address by the Chairman will be given immediately after the Annual Meeting. Mr. T. Petch, B.A., B.Sc., will lecture on ' British Hypocreaceæ ' on Sunday evening, 6th September, at 8 p.m., and will be followed by a lecture by Mr. W. G. Bramley on ' Rusts.'

The open lecture will be given by Mr. W. G. Bramley on Monday evening, 7th September, at 8 p.m. in the village hall adjoining the hotel, and the fungi collected on the excursion will be on view here previous to the lecture.

Members are requested to bring books, microscopes, etc.

RECORDS.—Records are desired in greater detail than usual. Will collectors please bring portions of the substances on which saprophytic species are growing, and make full notes as to habitat, etc. The kind of habitat in which the host plant of a parasitic species is growing should also be noted.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

.....19.....

.....[*Signature and Titles.*]

.....

.....[*Address.*]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written resignation is given.

Members are entitled to receive ' The Naturalist ' and all other current publications of the Union, free.

.....
.....
} [*Signature of Proposer and Seconder.*]

CIRCULAR No. 401.

Yorkshire Naturalists' Union.

President:

E. G. BAYFORD, F.R.E.S., Barnsley.

Hon. Secretary:

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

S. D. PERSY FISHER, Sackville Street, Leeds.

Vice-Presidents:

W. EAGLE CLARKE, LL.D., F.R.S.E., Edinburgh.
PROF. SIR A. C. SEWARD, M.A., F.R.S., Cambridge.
ALFRED HARKER, M.A., F.R.S., Cambridge.
THOMAS SHEPPARD, M.Sc., F.G.S., F.S.A.Scot., A.L.S., Hull.
RILEY FORTUNE, F.Z.S., Harrogate.
PROF. W. GARSTANG, M.A., D.Sc., F.Z.S., Oxford.
H. B. BOOTH, F.Z.S., M.B.O.U., Ben Rhydding.
T. W. WOODHEAD, Ph.D., M.Sc., F.L.S., Huddersfield.
SIR A. SMITH WOODWARD, LL.D., F.R.S., F.L.S., F.G.S., London.
PERCY H. GRIMSHAW, F.R.S.E., F.R.E.S., Edinburgh.
PROF. J. H. PRIESTLEY, D.S.O., B.Sc., F.L.S., Leeds.
EDWIN HAWKESWORTH, Cross Gates, Leeds.
WM. FALCONER, F.R.E.S., Liverpool.
PROF. F. O. BOWER, D.Sc., F.R.S., F.L.S., Ripon.
HERBERT E. WROOT, Bridlington.
T. PETCH, B.A., B.Sc., North Wootton, King's Lynn.
PROF. A. GILLIGAN, D.Sc., F.G.S., M.I.M.E., Leeds.
J. MEIKLE BROWN, B.Sc., F.L.S., F.R.E.S., Sheffield.
W. S. BISAT, F.G.S., North Ferriby, East Yorks.

The 401st Meeting

and 75th Annual Meeting

WILL BE HELD AT

BARNSLEY

On Saturday, December 5th, 1936

The Annual Meeting of the Union will be held in the Mining Department of the Technical College, by the courtesy of the Barnsley Education Committee.

The Barnsley Naturalist and Scientific Society have invited us to a Conversazione with refreshments in the evening, and the Mining Department of the Technical College have kindly undertaken to stage a display of geological specimens and a collection of miners' lamps; they have also arranged to carry out experiments showing the effect of stone dusting on a coal-dust explosion. This will be of interest in view of the recent fatality at Wharncliffe Woodmoor.

The Mayor of Barnsley, Mr. Alderman Jones, C.B.E., J.P., will receive and welcome the visitors at 5-45 p.m., though he will not be able to remain with us during the Annual Meeting.

TRAVEL FACILITIES.—Barnsley is well placed with rail connections and also bus routes; a time-table will be placed in the Hall for members' convenience.

PROGRAMME

2-0 p.m. **Sectional and Committee Meetings.**

2-30 p.m. **Executive Meeting.**

3-0 p.m. **General Committee Meeting. Tea interval** (to be taken in town).

5-45 p.m. **Mayoral Welcome.**

6-0 p.m. **Annual Meeting and Presidential Address** on "The Rise and Progress of Coleopterology in Yorkshire."

7-0 p.m. **Demonstration by means of a miniature explosion.**

Conversazione.

Will members of the **Executive** and of the **General Committee** take note of the above times as no further notice of these meetings will be sent out.

YORKSHIRE NATURALISTS' UNION

LIST OF MEMBERS, 1936

The year shown is that of election as full member of the Yorkshire Naturalists' Union.
The Signs in the second column :—

* = Permanent Members of the General Committee.
E = Members of the Executive.
P = Presidents and Past-Presidents who are *ex-officio* members of the Executive.
All Members of the Executive are also members of the General Committee.
L = Life Members.
HL = Honorary Life Members.

1930 ... Abercrombie, R. G., B.A., M.D., Derwent House, Hathersage, Derbyshire.
1931 ... Akeroyd, J. W., Hollin Hill, Roundhay, Leeds, 8.
1931 * Allen, C., 28 Grosvenor Terrace, York.
1926 ... Allen, F., Greenfield, Oldham.
1921 * Allison, Miss H. E., B.Sc., The Training College, Bingley.
1931 ... Anderson, Miss L. M., 48 Denton Avenue, Gledhow, Leeds, 8.
1909 P Armstrong, A. L., M.C., F.S.A., 27 Victoria Road, Stockton Heath, Warrington.
1920 ... Ashworth, J. H., F.R.E.S., Walton Fold, Longridge, Preston.
1921 ... Astley, Capt. H., Carr Laund, Nelson, Lancs.
1907 * Atkinson, J., 41 St. Michaels Road, Headingley, Leeds, 6.

1929 ... Baggaley, J. W., F.Z.S., Weston Park Museum, Sheffield, 10.
1934 ... Bain, W., M.Sc., Enniskerry, Gomersal, Leeds.
1934 ... Bain, Mrs. W., Enniskerry, Gomersal, Leeds.
1933 ... Bamforth, Mrs. R., B.A., 50 Longlands Road, Slaithwaite.
1927 ... Bamford, W., 70 Kent Road, Harrogate.
1936 ... Barnes, H., B.Sc., B.A. (Oxon.), Ashville College, Harrogate.
1934 * Barnes, M. D., 12 Dudley Road, Marsh, Huddersfield.
1889 P Bayford, E. G., F.R.E.S., 38 Eldon Street, Barnsley.
1924 ... Beaumont, A. G., 19 Castle Road, Sandal, Wakefield.
1933 ... Bedford, T. H. B., M.Sc., M.B., M.R.C.P., Medical School, The University, Manchester.
1920 ... Behrens, H. J., Moorside, Ilkley.
1920 ... Behrens, Mrs., Moorside, Ilkley.
1924 ... Belbin, H. L., 69 Crawshaw Grove, Beauchief, Sheffield.
1907 ... Bellerby, W., 21 Clifton Green, York.
1923 ... Bennett, W., Parker's Hotel, Upper Briggate, Leeds, 1.
1935 ... Bentley, A. C., B.Sc., 27 Ayresome Terrace, Street Lane, Leeds, 8.
1907 * Bevan, D. W., 32 Nansen Street, Scarborough.
1933 ... Bilbrough, Mrs. L. M., 126 Stainbeck Road, Meanwood, Leeds, 7.
1919 ... Birch, W. G., Yewcourt, Stockton Lane, York.
1903 ... Bisat, G. B., 30 Nether Hall Road, Doncaster.
1935 P Bisat, W. S., F.G.S., North Ferriby, Hull.
1905 PL Booth, H. B., F.Z.S., M.B.O.U., Ryhill, Ben Rhydding, Ilkley.
1928 P Bower, Prof. E. O., D.Sc., F.R.S., F.L.S., 2 The Crescent, Ripon.
1930 ... Boycott, Prof. A. E., D.M., F.R.S., Ewen Farm House, Cirencester.
1934 ... Boyne, Dr. A. M., 174 Anlaby Road, Hull.
1894 ... Bradford Free Library, Darley Street, Bradford.
1921 ... Bradley, A. E., 1 Pilgrims Lane, Hampstead, London, N.W.3.
1921 * Bramley, W. G., Spring Cottage, Pallathorpe, Bolton Percy, York.
1919 ... Brigg, J. J., M.A., J.P., Kildwick Hall, Keighley.
1936 ... Britten, H., F.R.H.S., The Nursery, Crescent Avenue, Whitby.
1935 ... Broadbent, A., 114 Huddersfield Road, Meltham.
1919 ... Brook, J. H., Laurel Mount, Newton Park, Leeds, 7.
1925 ... Brook, N., Maydale, Honley, Huddersfield.
1920 P Brown, J. M., B.Sc., F.L.S., F.R.E.S., 176 Carter Knowle Road, Sheffield, 7.
1920 ... Browning, Miss D. M., B.Sc., Lindens, Victoria Avenue, Yeadon.
1934 ... Bunce, H. O., 37 Auckland Avenue, Cottingham Road, Hull.
1931 ... Burch, Miss D. V., Diocesan Training College, Ripon.
1932 ... Burkill, H. J., M.A.,F.R.G.S., 3 Newman Court, Cornhill, London, E.C.3.
1914 E Burrell, W. H., F.L.S., 203 Hall Lane, Horsforth, Leeds.
1935 ... Burton, G., School House, Topcliffe, Thirsk.
1935 ... Bussey, B., 3 Bankfield Drive, Nabwood, Shipley.
1934 ... Butterfield, J. A., M.Sc., F.G.S., City of Leeds School, Leeds, 2.
1909 E Butterfield, R., F.R.E.S., The Museum, Victoria Park, Keighley.
1916 L Bywater, M., 64 Park Road, Low Moor, Bradford.

1891 L Carpenter, The Hon. Mrs., 22 Grosvenor Road, Westminster, London.
1923 L Cattley, Major A., C.M., B.Sc., F.R.M.S., 43 Main Avenue, Heworth, York.

1929	...	Chadwick, J. A., 21 West Bank, Scarborough.
—	...	Chadwick Museum, Bolton, Lancashire.
1910	...	Cheavin, Capt. H. S., F.C.S., F.R.E.S., F.R.M.S., Chemistry Department, Middlesex Hospital, London, W.1.
1905	LE	Cheetham, C. A., F.R.E.S., Austwick, *via* Lancaster.
1920	E	Chislett, R., F.R.P.S., M.B.O.U., Larkspur, Broom Crescent, Rotherham.
1924	...	Cherry, Miss A., Ph.D., Grainholme, West Bank, Riddlesden, Keighley.
—	L	Clarke, J. E., B.A., B.Sc., Burleigh Redroofs, Portway Street, Somerset.
—	P	Clarke, W. Eagle, LL.D., F.R.S.E., Edinburgh.
1892	L	Clarke, W. J., F.Z.S., 33 Oak Road, Scarborough.
1933	...	Crapnell, V. S., 51 The Grove, Hipperholme, Halifax.
1915	...	Cross, E. R., 12 Filey Road, Scarborough.
1933	...	Cushin, W. H., B.A., F.R.G.S., Grace Ramsden School, Elland.
1920	E	Dallman, A. A., F.C.S., A.L.S., 12 Tickhill Road, Doncaster.
1936	...	Daniel, Miss V., B.Sc., The Training College, Bingley.
1935	...	Dearing, F., 135 Park Road, Elland.
1903	L	Dent, Major J. W., Ribston Hall, Wetherby.
1922	...	Dibb, H., 209 Bingley Road, Shipley.
1926	E	Dibb, J. R., F.R.E.S., 1 Moorland Grove, Moor Allerton, Leeds 7.
1922	L	Dixon, Miss A., M.Sc., F.L.S., F.R.M.S., Kanguri, Batchwood Drive, St. Albans.
1936	...	Donnan, Mrs. J. V., 37 Churchwood Avenue, Far Headingley, Leeds 6.
1928	...	Dufty, Miss E., 144 Cleveland Street, Doncaster.
1926	*	Dufty, F. J. N., 18 Brook Street, Skipton.
1925	...	Dyson, C. W., 19 Portland Street, Huddersfield.
1910	*	Edmondson, F. H., The Lindens, Utley, Keighley.
1901	...	Edmondson, Prof. T. W., M.A., New York University, University Heights, New York, U.S.A.
1921	...	Elwers, W., 1 Buckingham Road, Doncaster.
1922	...	Evans, Capt. S. E., M.A., 4 Bass Terrace, Doncaster.
1909	P	Falconer, W., F.R.E.S., 25 Ashdale Road, Waterloo, Liverpool.
1921	*	Fearnley, W. F., Arvensis, The Drive, Ben Rhydding, Ilkley.
1936	...	Fearnsides, Prof. W. G., M.A., F.R.S., F.G.S., M.Inst.M.E., 11 Radnor Crescent, Sheffield.
1925	...	Featherstone, C. R., M.A.Oxon., Clifton Rise, York.
1933	...	Fenton, W. C., M.C., J.P., Fieldhead, Cleckheaton.
1933	...	Fenton, Mrs. W. C., Fieldhead, Cleckheaton.
1912	E	Firth, J. D., F.L.S., 347 Otley Road, Leeds, 6.
1936	...	Fisher, D., Alcedo, King Lane, Moortown, Leeds, 7.
1925	E	Fisher, S. D. P., Sackville Street, Leeds, 7.
1935	...	Fisher, Mrs. S. D. P., Sackville Street, Leeds, 7.
1935	...	Flintoff, T., Fieldhead, Cavendish Road, Kersal, Manchester.
1905	E	Fordham, W. J., M.R.C.S., L.R.C.P., D.P.H., The Garth, Barmby Moor, York.
1931	...	Forges, C. G. des., Dial House, Wentworth, Rotherham.
1909	...	Forrest, H. E., Hillside, Bayston Hill, Shrewsbury.
1926	*	Forrest, W. J., 43 Beaumont Road, Whitley Terrace, Bradford.
1887	P	Fortune, R., F.Z.S., 8 West Cliff Terrace, Harrogate.
1926	...	Foster, H., 48 Ridge Road, Upper Armley, Leeds, 12.
1933	...	Fox, C. E., F.S.I., 1 Harrison Drive, Halifax.
1909	*	Fryer, Dr. J. H., Veselay, Bardsey, Leeds.
1915	*	Fysher, Mrs. M., Halcyon House, Chapel Allerton, Leeds, 7.
1935	...	Gallwey, Miss M., 286 Almondbury Bank, Huddersfield.
1931	...	Gander, A. H., 15 Lidgett Park Avenue, Roundhay, Leeds, 8.
1908	P	Garstang, Prof. W., D.Sc., M.A., Oxford.
1933	...	Gaynor, Dr. J. S., Hall Cottage, New Earswick, York.
1915	L	Gibson, E. B., L.D.S., Croft Terrace, Hebden Bridge.
1913	P	Gilligan, Prof. A., D.Sc., F.G.S., Geological Department, The University, Leeds, 2.
1921	...	Gladstone, Major R. M., The Hollins, Grosmont, Yorkshire.
1929	...	Good, R. D'O., M.A., F.L.S., University College, Hull.
1935	...	Goudie, Lieut. K., No. 26 (A.C.O.) Squad., Royal Air Force, Catterick.
1920	...	Grainger, Miss J., Shenstone, Wilshaw Road, Meltham, Huddersfield.
1925	E	Grainger, J., M.Sc., Ph.D., Tolson Memorial Museum, Huddersfield.
1922	...	Grainger, Mrs., M.Sc., Tolson Memorial Museum, Huddersfield.
1935	...	Graham, J. F., Zoology Department, The University, Leeds, 2.
1908	*	Greaves, A. E., 29 Fountayne Street, Goole.
1914	*	Greaves, W., Grimsgarth, Park Drive, Rochdale Road, Halifax.
1933	...	Green, C., 443 Beverley Road, Hull.
1918	...	Greenwood, T. F., Hirst Leigh, Birchcliffe Road, Hebden Bridge.
1907	P	Grimshaw, P. H., F.R.E.S., F.R.S.E., Royal Scottish Museum, Edinburgh.
1921	E	Grist, W. R., B.Sc., 8 Moor Park Avenue, Headingley, Leeds, 6.
1887	...	Haigh, G. H. C., M.B.O.U., Grainsley Hall, Grimsby.
1930	...	Haigh, J. A., 39 Salisbury Avenue, Goole.

1935 ... Haley, A. A., F.G.S., Grove House, Walton, Wakefield.
1902 * Haley, W. B., 9 Myrtle Road, Ravensthorpe, Dewsbury.
1890 ... Hallimond, Dr. H. T., Escomb, Sleights, Yorkshire.
1919 * Hallowell, E., 12 Edward Street, Sowerby Bridge.
1929 E Hardy, Prof. A. C., M.A., F.L.S., University College, Hull.
1931 ... Harvie, Miss D. E., B.Sc., 35 Abercorn Place, London, N.W.8.
1911 P Harker, A., M.A., F.R.S., St. John's College, Cambridge.
1908 ... Harrogate Public Library, Victoria Avenue, Harrogate.
1897 E Hartshorn, J., The Mount, Leyburn.
1891 P Hawkesworth, E., Sunnyside, Crossgates, Leeds.
1935 E Hemingway, J. E., B.Sc., Ph.D., Geological Department, The University, Leeds, 2.
1924 ... Herklots, G. A. C., B.Sc., Ph.D., F.L.S., The University, Hong Kong, *via* Siberia.
1922 ... Hilary, H. O., Fellfoot, Bingley.
1926 ... Hilary, Mrs. H. O., Fellfoot, Bingley.
1919 E Hilary, Miss D., B.Sc., 15 Plevna Terrace, Bingley.
1924 E Hincks, W. D., M.P.S., F.R.E.S., 46 Gipton Wood Avenue, Harehills, Leeds, 8.
1922 E Hirst, Ald. A., 10 Talbot Avenue, Huddersfield.
1924 ... Hodgkinson, J., Rosehill, Penistone.
1909 * Howard, G., F.R.Met.S., 3 Sitwell Vale, Moorgate, Rotherham.
1928 ... Howarth, R., 8 Church Street, Peel, I.O.M.
1923 E Hudson, R. G. S., D.Sc., F.G.S., 6 St. Ann's Drive, Burley, Leeds, 4.
1936 ... Hughes, D. R., B.Sc., 41 Main Avenue, York.
1930 * Hughes, Miss E., 22 Talbot Grove, Street Lane, Leeds, 8.

1932 ... Illingworth, J. L., M.A., Linden Lea, Station Road, Burley in Wharfedale.

1909 * Jackson, E. W., F.C.S., F.G.S., Godrevy, Saltburn by Sea.
1904 * Johnson, J. W. H., M.Sc., F.I.C., Grange View, Walton, Wakefield.
1907 E Johnstone, Miss, M.A., B.Sc., F.L.S., 9 Victoria Avenue, Cheadle Hulme, Cheshire.
1903 LE Jones, R. C. F., Trinity House, Denton Road, Ilkley.

1902 * Lawton, F., Bentley House, Skelmanthorpe, near Huddersfield.
1926 ... Lealman, W. S., West End, Kirby Moorside.
1907 ... Leeds Public Library, Leeds.
1929 ... Leicester Museum and Art Gallery, The New Walk, Leicester.
1933 * Longbottom, M., Cartwright Hall, Manningham, Bradford.
1898 ... Lucas, B. R., Dale Lodge, Staindrop Road, Darlington.
1919 * Lumb, J. H., 1A Clarenden Place, Hopwood Lane, Halifax.

1925 ... Macmillan, W. E. F., 42 Onslow Square, London, S.W.7.
1923 ... Mainprise, S. L. V., c/o B.B.P. Co. Ltd., Yenengyaung, Upper Burma.
1936 ... Malins, Miss M., B.Sc., 214 Upper Woodlands Avenue, Toller Lane, Bradford.
1908 ... Malone, M., 12 Northfield Terrace, Manningham, Bradford.
1914 * Mason, C. W., 15 Park Avenue, Hull.
1923 ... Mason, H., 29 Frankland Terrace, Leeds, 7.
1936 ... Mattinson, Miss K. M., Austwick, *via* Lancaster.
1936 ... Mattinson, W. K., Austwick, *via* Lancaster.
1922 ... Maugham, J., Estate Office, Jervaulx, Yorkshire.
1931 ... Middleton, A. D., University Museum, Oxford.
1893 L Mills, F. W., Woodford Hall, Milton Damerel, North Devon.
1918 E Milsom, F. E., B.Sc., Glen Lyn, Station Road, Shepley, Huddersfield.
1930 * Montagu, Miss A. E., Low Borrans, Windermere.
1926 E Morehouse, Mrs. E. M., 23 Queen's Road, Doncaster.
1928 ... Morehouse, Miss K., 23 Queen's Road, Doncaster.
1928 ... Morris, T. O., c/o Oil Department, Steel Bros. & Co. Ltd., 6 Fenchurch Avenue, London, E.C.3.
1920 ... Musgrave, Miss E., B.Sc., 30 Lister Lane, Bradford.

1925 ... Neave, S. A., O.B.E., M.A., D.Sc., F.Z.S., F.R.E.S., 41 Queen's Gate, South Kensington, London, W.8.
1931 ... Nelson, G. A., Ph.C., F.L.S., Holme Lea, The Crescent, Lawnswood, Leeds.
1923 ... Newbould, W., Imberley Lodge, East Grinstead, Sussex.
1903 ... Nottingham Natural History Museum, Nottingham.

1931 L Oldham, C., F.L.S., F.Z.S., M.B.O.U., The Bollin, Berkhampstead.
1890 L Oxley, H., Spenfield, Weetwood, Leeds.

— L Pawson, Mrs. A. H., 26 Kensington Court Gardens, London, W.8.
1893 ... Peake, Rev. E., Bluntisham Rectory, St. Ives, Hunts.
1920 E Pearsall, W. H., D.Sc., F.L.S., 7 Ancaster Road, Far Headingley, Leeds, 6.
1918 ... Pearson, A. A., F.L.S., 43 Madeira Park, Tunbridge Wells.
1909 * Peck, A. E., 20 Avenue Road, Scarborough.
1893 P Petch, T., B.Sc., North Wootton, King's Lynn.

1917	L	Phillips, Mrs. McG., Laverton Grange, Kirby Malzeard, Ripon.
1928	...	Pilling, Miss M., Ph.D., Croft House, Outlane, Huddersfield.
1925	...	Ping, A. W., M.A., F.R.Met.S., St. Olaves, Clifton, York.
1911	PL	Priestley, Prof. J. H., D.S.O., B.Sc., F.L.S., The University, Leeds, 2.
1921	...	Priestley, Mrs. M. E., 12 Weetwood Road, West Park, Leeds, 6.
1920	E	Procter, C. F., 419 Holderness Road, Hull.
1898	...	Punch, J. W. R., Howe View, Castleton R.S.O., Yorkshire.
1923	...	Quayle, Mrs. E. M., Ph.D., Redhouse, High Street, Bewdley, Worcs.
1928	...	Raistrick, A., Ph.D., M.Sc., F.G.S., Armstrong College, Newcastle upon Tyne.
1935	...	Ramsey, M. P., The Grammar School, Rothwell, near Leeds.
1935	...	Reynoldson, T. B., The University, Leeds, 2.
1934	...	Rob, Miss C. M., Catton Hall, Thirsk.
1922	...	Roberts, E. E., M.A., 12 Southway, Arthur's Avenue, Harrogate.
1920	...	Roberts, T. N., 38 West Bank, Scarborough.
1898	*	Robertshaw, A. G., Gordon Bank, Luddendenfoot, Yorkshire.
1929	...	Roger, R. V., 12 Hall Garth, Pickering.
1915	...	Roome, G. W., 21 Glen Almond Road, Sheffield.
—	L	Rowntree, J. H., Scalby Nab, Scarborough.
1923	...	Ryan, Miss E., 71 Stainburn Crescent, Moor Allerton, Leeds, 7.
1897	...	Saner, C. O. F., South Street, Cottingham, Hull.
1922	E	Scott, Miss L. I., M.Sc., Lyddon Hall, Virginia Road, Leeds, 2.
1910	P	Seward, Prof. A. C., M.A., F.R.S., Cambridge.
1930	...	Shaw, Miss M., Fenay Bridge, Lepton, Huddersfield.
1936	...	Sheard, G. F., Devonshire Hall, Headingley, Leeds, 6.
1886	...	Sheffield Central Free Library, Sheffield.
1897	HLP	Sheppard, T., M.Sc., A.L.S., F.G.S., F.S.A. (Scot.), The Museum, Hull.
1931	...	Shillito, C. F. B., Brocklesby, Harbrough, Lincolnshire.
1920	...	Schroeder, Rev. W. L., M.A., 2 Grosmont, Shaw Lane, Headingley, Leeds, 6.
1923	E	Sledge, W. A., B.Sc., Ph.D., 38 Kelso Road, Leeds, 2.
1917	...	Smart, Major H. D., M.D., F.R.E.S., 1 Derby Road, Woodford, London, E.18.
1920	E	Smith, A. M., M.A., F.L.S., Biological Department, Technical College, Bradford.
1934	...	Smith, L., 36 Kenilworth Avenue, Cottingham Road, Hull.
1934	...	Smith, Stuart, B.Sc., Ph.D., The University, Leeds, 2.
1907	*	Smith, S. H., J.P., F.Z.S., "Willowsyde" Westlands Grove, York.
1934	E	Spaul, Prof. E. A., D.Sc., Ph.D. (Lond.), F.Z.S., The University, Leeds, 2.
1933	*	Stainforth, T., B.A., B.Sc., 145 Westbourne Avenue, Hull.
1891	E	Stather, J. W., F.G.S., Brookside, Newland Park, Hull.
1932	...	Stubbs, F. B., 80 Spring Lane, Oldham.
1908	...	Sykes, A. W., High Close, Kidroyd, Huddersfield.
1911	E	Taylor, E. W., 10 Chestnut Avenue, York.
1897	L	Teale, J., Bankfield House, Yeadon, near Leeds.
1935	...	Tetley, J. N., The Brewery, Leeds.
1911	...	Thomas, H. H., M.A., Botany School, Cambridge.
1932	...	Thomas, Miss M., B.Sc., 60 Stratford Street, Dewsbury Road, Leeds, 11.
1931	...	Tomlinson, Rev. C., M.A., Bolton Abbey Rectory, Skipton.
1936	...	Thompson, A., 15 Banner Cross Drive, Sheffield, 11.
1936	...	Thompson, Mrs. A., 15 Banner Cross Drive, Sheffield, 11.
1918	*	Thornes, A., Rylstone, Ash Road, Headingley, Leeds, 6.
1925	...	Throup, T., Guide House, Haworth Road, Bradford.
1921	E	Versey, H. C., D.Sc., F.G.S., 1 Stainburn Terrace, Moor Allerton, Leeds, 7.
1911	...	Waddington, T., Fairbank, King Lane, Moor Allerton, Leeds, 7.
1907	HL	Wade, E. W., Ferriby, St. Osmund Road, Parkstone, Dorset.
1910	*	Wade, H., 10 Pitt Street, Barnsley.
1920	E	Walsh, G. B., B.Sc., Linthorpe, Stepney Drive, Scarborough.
1930	...	Ward, A. B., B.A., Endcliffe Vale House, Sheffield.
1891	*	Waterfall, C., Dalmeny, Shavington Avenue, Hoole, Chester.
1903	E	Wattam, W. E. L., 302 Newsome Road, Huddersfield.
1935	...	Webb, R. A., 40 The Grove, Hipperholme, Halifax.
1918	...	Whitby Literary and Philosophical Society, W. L. Hornby, Barclay's Bank, Whitby.
1924	*	Whitehead, H., B.Sc., 3 Barthorpe Avenue, Chapel Allerton, Leeds, 7.
1930	...	Wilkinson, Miss N., 7 Hanover Square, Leeds, 3.
1923	...	Willatt Major W. H., Reighton Hall, Bridlington.
1922	...	Wilson, A., F.L.S., Tir-y-Coed, Roe Wen, Conway.
1930	...	Wilson, C. H., 33 Peasholme Drive, Scarborough.
1918	E	Winter, A. E., F.R.E.S., 145 Westland Avenue, Harrogate.
1905	E	Winter, W. P., B.Sc., F.G.S., 6 Grange Avenue, Hirstwood, Saltaire.
1928	...	Wood, A., 99 Royal Park Avenue, Hyde Park, Leeds, 6.
1934	...	Wood, J., 138 Redcliffe Street, Keighley.
1890	P	Woodhead, T. W., Ph.D., M.Sc., F.L.S., 35 Longley Road, Huddersfield.

1923	P	Woodward, Sir A. Smith, LL.D., F.R.S., F.L.S., F.G.S., London.
1930	*	Wooff, Miss D., Flat 5, Kingston Terrace, Leeds, 2.
1934	...	Wrangham, G. W., 12 Piccadilly, Bradford.
1929	...	Wright, J., F.G.S., F.R.E.S., 212 Colinton Road, Edinburgh, 11.
1935	...	Wright, J., 23 Bonegate Road, Brighouse.
1901	P	Wroot, H. E., Ratho, St. Stephen Road, Bridlington.
1934	...	Yeoman, Miss K. P., The Close, Brompton, Northallerton.
1935	...	Yeoman, Miss R., The Green, Brompton, Northallerton.
1921	...	Zimmermann, V. G. F., Linden Cottage, Huntington, near York.

LIST OF SOCIETIES

Affiliated with the Yorkshire Naturalists' Union, with the addresses of the Secretaries

1925	Austwick and District Field Club.—Chris. A. Cheetham, Austwick, *via* Lancaster.
—	Barnsley Naturalists' Society.—Geo. H. Sutton, 116 Summer Lane, Barnsley.
1921	Berry Brow Naturalists' Society.—W. Crawshaw, 19 Back Stoney Lane, Taylor Hill, Lockwood, Huddersfield.
1905	Bootham School Natural History Society.—S. K. Brown, Bootham School, York.
—	Bradford Natural History and Microscopical Society.—A. Eric White, 41 Willow Crescent, Bolton, Bradford.
1905	Bradford Scientific Association.—O. J. Harding, M.Sc., 76 Pasture Lane, Clayton, Bradford.
1906	Cleveland Naturalists' Field Club.—M. Odling, Cherwell, The Grove, Marton in Cleveland, Middlesbrough.
1887	Craven Naturalists' Society.—A. Mitchell, 65 Otley Road, Skipton.
1905	Cross Hills Naturalists' Society.—A. Butterfield, Highgate, Glusburn, Keighley.
1892	Darlington and Teesdale Naturalists' Field Club.—J. E. Nowers, Friends School Premises, Skinnergate, Darlington.
—	Doncaster Scientific Society.—L. Smith, 6 Rainton Road, Doncaster.
1897	Greetland and West Vale Naturalists' Society.—W. Moores, 51 Briscoe Lane, Greetland, Halifax.
1906	Halifax Scientific Society.—R. W. Harris, 304 Hopwood Lane, Halifax.
1906	Hebden Bridge Literary and Scientific Society.—E. B. Gibson, Croft Terrace, Hebden Bridge.
1861	Heckmondwike Naturalists' Society.—(now merged in the Spen Valley Literary and Scientific Society).
1924	Honley Naturalists' Society.
1899	Huddersfield Naturalists' Photographic and Antiquarian Society.—H. Green, 2 Bank View, Almondbury, Huddersfield.
1888	Hull Geological Society.—J. W. Stather, Brookside, Newland Park, Hull.
1888	Hull Scientific and Field Naturalists' Club.—A. K. Wilson, 19 Wolfreton Villas, Springhead, Hull.
1914	Keighley Naturalists' Society.—R. Butterfield, The Museum, Keighley.
1892	Leeds Co-operative Naturalists' Field Club.—K. Howell, 33 Norman Row, Morris Lane, Leeds, 5.
1908	Leeds Geological Society.—Dr. J. E. Hemingway, Dept. of Geology, The University, Leeds.
—	Leeds Naturalists' Club and Scientific Society.—G. A. Nelson, 1 Caledonian Road, Leeds, 1.
1921	Milnsbridge Naturalists' Society.—L. Garside, 360 Manchester Road, Milnsbridge.
1883	Rotherham Naturalists' Society.—R. Stewart, 12 Broomfield Grove, Rotherham.
1890	Scarborough Field Naturalists' Society.—Mrs. R. L. Leefe, Moriston, Throxenby Lane, Newby, Scarborough.
1884	Scarborough Philosophical and Archæological Society.—H. H. Farwig, The Hermitage, Green Lane, Newby, Scarborough.
1913	Selby Scientific Society.—A. Hutchinson, Fen-Ridge, Wistow Road, Selby.
1927	Settle Naturalist and Antiquarian Society.—E. Roberts, School House, Settle.
—	Sorby Natural History Society.—Alan B. Ward, 24 Chapel Walk, Sheffield, 1.
1911	South West Yorkshire Entomological Society.—J. Hooper, 88 Thornes Road, Wakefield.
1908	Spen Valley Literary and Scientific Society.—Hon. Sec., Healds Hall, Leeds Road, Liversedge.
1927	St. Peter's School Scientific Society.—A. W. Ping, M.A., St. Olaves, Clifton, York.
—	Wakefield Naturalists' Society.—R. W. Gelsthorpe, 1 Wentworth Terrace, Wakefield.
1913	Whitby Naturalists' Club.—Percy Burnett, Longmynd, Ruswarp Lane, Whitby.
1907	York and District Field Naturalists' Society.—A. W. Ping, M.A., St. Olaves, Clifton, York.
1905	Yorkshire Conchological Society.—E. Dearing, Devonshire Hall, Headingley, Leeds, 6.

Whilst The Heckmondwike Naturalists' Society has ceased to exist as a separate body, the name has been included, as it was at the first meeting of this Society in 1861 that the confederation of local societies which was later to become the Yorkshire Naturalists' Union was formed.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

NORTH WESTERN NATURALIST

A Scientific and Educational Journal (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

Edited by A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.
J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., Ph.D.
C. L. WALTON, M.Sc., Ph.D.
F. E. WEISS, D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.Met.S.

Communications to :—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.
Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

Edited by J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, **6/-** *post free. Single Parts,* **1/3.**

All communications to be addressed to—

W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and the connected Sciences. | Rundschau für Geologie und verwandte Wissenschaften | Rassegna di Geologia e delle Scienze affini.

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators.

Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liége (Belgique).

Annual subscription price:
35 Belgas, sent to Mr. G. TIBAUX, 35 rue des Armuriers, LIÉGE, BELGIUM, also through a bookseller.

A New Work by the Author of *YORKSHIRE* in the *Borzoi County Histories.*

ROMAN YORKSHIRE

208 + 12 Pages, Demy 8vo, with 8 Full Page Plates, and 8 Diagrams and Maps in the text, bound in Art Cloth Boards, 7/6 net or post free 8/-.

BY

F. R. PEARSON, B.A.

SENIOR HISTORY MASTER AT BRIDLINGTON SCHOOL

WITH FOREWORD BY

THE RT. HON. THE VISCOUNT HALIFAX

The Contents include :—

The Invasion of Britain and the Advance of the Frontier (A.D. 43-71)

The Invasion of Yorkshire and the Foundation of Eburacum (A.D. 71-77)

The Subjection of Yorkshire and the Problem of the Pennines (A.D. 77-85)

Some Branches of Ermine Street in Yorkshire

Some Roman Roads and Stations in North and East Yorkshire

Some Roman Roads and Stations in West Yorkshire

Roman York

Trade and Industry in Roman Yorkshire

The Coast Defences of Roman Yorkshire

Obtainable through all booksellers

An eight-page illustrated pamphlet will be gladly sent by the publishers, free of charge

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.

SMITHSONIAN INSTITUTION LIBRARIES
3 9088 01206 3293